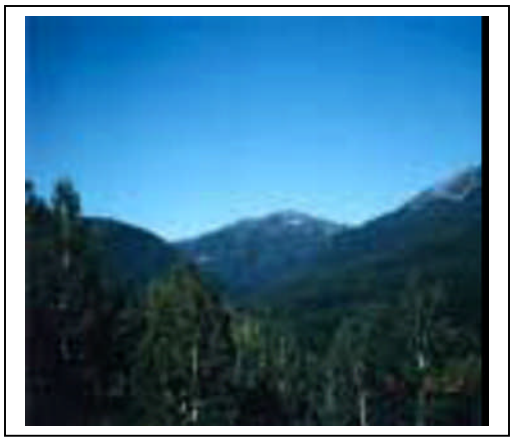
Evaluation of the PrintSTEP Pilot Program

August 16, 2006



Acknowledgements

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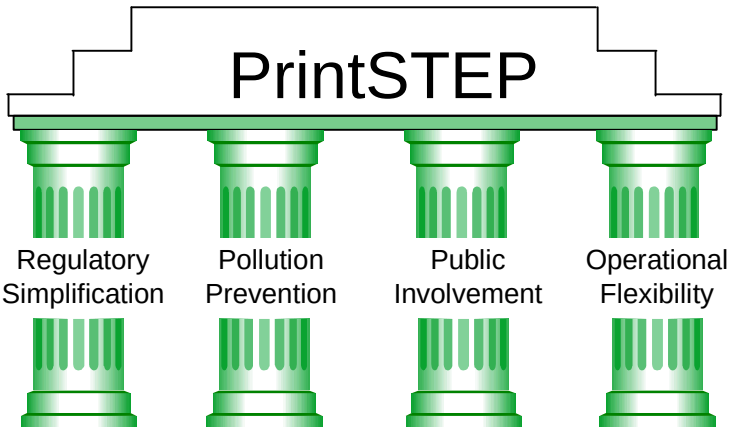
Introduction

Printing, like any industry, has regulatory requirements that limit a facility's releases into the environment. Many in the printing industry, as well as representatives from state and federal government, environmental justice groups, and labor found these regulations could be complicated and confusing, especially for small businesses. The U.S. Environmental Protection Agency brought representatives from these organizations together to form a national team which developed the Printers' Simplified Total Environmental Partnership (PrintSTEP), a voluntary, multimedia alternative to the traditional administration of environmental regulation and permitting. PrintSTEP is intended to simplify these regulations and encourage awareness of environmental regulation in the printing industry. The National PrintSTEP team held numerous facilitated meetings with the goal of developing a commonsense approach to environmental protection in the printing industry. PrintSTEP was designed to meet the following **goals**:

- Enhance environmental protection.
- Increase use of pollution prevention practices.
- Improve efficiency of the regulatory process for printers.
- Improve efficiency of the regulatory process for state governments.
- Enhance public involvement.
- Provide motivation for stakeholders to participate in PrintSTEP.

The six goals of the PrintSTEP team were translated into the PrintSTEP pilot with features described as the four "**pillars**" of PrintSTEP:



- **Regulatory simplification.** PrintSTEP combines environmental regulatory programs impacting printing facilities into one modular, multimedia system. This system is intended to make it simpler for printers, regulators, and the public to understand printers'

environmental requirements, and easier for printers to comply with the requirements. Further, plain language tools were created to assist printers in determining their air emissions and regulatory requirements.

- **Pollution prevention.** Pollution prevention refers to changing industrial processes to generate less pollution in the first place, instead of treating and disposing of it after it is created. According to the Environmental Protection Agency's (EPA's) pollution prevention hierarchy, pollution prevention is a more efficient way of protecting the environment than after-the-fact treatment and disposal. Technical assistance was available through PrintSTEP to help printers prevent pollution. PrintSTEP was also structured so that the level of regulatory oversight would be proportional to the level of waste or emissions, thereby encouraging pollution prevention.
- **Public involvement.** PrintSTEP was designed to provide an opportunity for regulatory agencies, the printer, and the community to educate each other on environmental concerns and interests. PrintSTEP required that early and actual notice be provided to the surrounding community and "registered interested parties," and included opportunities for public meetings to address community concerns related to printers' environmental impacts.
- **Operational flexibility.** PrintSTEP was designed to streamline the permit process to give printers the ability to make certain changes to their processes without having to change their permit. This streamlining was accomplished by establishing "levels" for air emissions and hazardous waste generation. Each PrintSTEP air level, for example, corresponds to an allowable range of emissions. If a facility wanted to make a change to its operations that affected air emissions, it could do so without going through a regulatory approval process provided the change did not cause facility wide emissions to exceed the range of the facility's air level. Multimedia permitting was also intended to encourage holistic consideration of facility emissions.

To test the PrintSTEP concepts developed by the national PrintSTEP team, EPA entered into cooperative agreements with the Missouri Department of Natural Resources (MO DNR) and the New Hampshire Department of Environmental Services (NH DES). The MO DNR agreed to conduct a PrintSTEP pilot in the St. Louis area. The NH DES decided to pilot the PrintSTEP program statewide. Initially, Minnesota was also a PrintSTEP participant but subsequently withdrew from the program (see Appendix A).

The EPA commissioned an evaluation of the PrintSTEP pilot program, the results of which are documented in this report. As such, it presents qualitative and quantitative information collected from printers at the beginning and end of the pilot. It also presents information from the other participants, the state grantees and community stakeholders. For comparison purposes, information on printers participating in PrintSTEP as well as those not participating is presented. The information and analysis are presented in a summary and in the form of recommendations at the conclusion of the report.

Structure of the PrintSTEP Program

The overarching goal of PrintSTEP was to help the printing industry achieve cleaner, cheaper, and smarter environmental protection through the creation of a simpler regulatory "framework." PrintSTEP did not change the existing environmental regulations impacting the printing industry. Instead, it changed the process of implementing those requirements. PrintSTEP was intended to improve environmental performance, be more efficient, and make the regulatory process easier to understand for both the printer and the general public. Further, the specific PrintSTEP approach was designed to encourage all stakeholders involved with the printing industry to become involved and contribute positively. Each state grantee established a local Stakeholder Advisory Group with representatives from industry, government and community groups. The state PrintSTEP Coordinator worked with these groups to customize the program designed by the national PrintSTEP team to meet their specific state and/or local needs.

In PrintSTEP, a printer's environmental requirements depended on the quantity of emissions or wastes a printing facility generated. PrintSTEP facilities with lower environmental releases had fewer requirements. Those printing facilities with the lowest releases would qualify for a PrintSTEP "Notification," and those with greater releases received a PrintSTEP "Agreement."

- A **Notification** required that printers document their environmental releases and send a completed PrintSTEP Application to the state environmental agency. These printers had to operate within the requirements described in the PrintSTEP Workbook, explained below, and maintain their Notification status, but in most cases no further contact with the state agency was required.
- An **Agreement**, intended for printers with greater environmental impact, also required that the printer document its environmental releases by sending a completed PrintSTEP Application to the state environmental agency. The printer then worked with the state and the community to develop a PrintSTEP Agreement. Printers in this category were required to notify the public of its Application and invite comments.

In addition, each pilot state created a Registry so that anyone interested in PrintSTEP could be put on a list to be notified of any activities. Lastly, all Applications, both Notifications and Agreements, were filed in an **Information Repository,** which was housed at local libraries, other public buildings, or on the Internet.

The national PrintSTEP team developed the following documents to assist with the PrintSTEP pilot implementation. Each pilot area customized these documents to reflect the way it implemented the pilot.

- **Guide to States.** This document outlined the goals, features, and anticipated benefits of the PrintSTEP alternative regulatory system. The document also included an implementation strategy to assist states in defining eligibility requirements, regulatory

thresholds, streamlining options, and geographic areas in which to implement pilot projects.

- **Printers' Plain Language Workbook.** This workbook outlined the entire PrintSTEP system and specifically identified what the printer had to do to meet environmental regulatory requirements. This multi-media workbook was provided to grantees as a template to be adapted to include state-specific needs. After state-specific modifications were made, the workbook was made available to printers and other interested parties in each state pilot location.
- **Community Handbook.** The community handbook was written for communities, containing plain-language information outlining the PrintSTEP public involvement provisions and explaining how the community, industry, and state regulators could work together to meet the goals of the PrintSTEP pilots.
- **Evaluation Strategy.** This document outlined how information would be collected and analyzed to determine whether PrintSTEP was beneficial for stakeholders and the environment.

Evaluation Methodology

Because PrintSTEP is a multifaceted program, it has a variety of goals. Evaluating if these goals were met required a range of distinct data collection and analysis activities. This report documents the results of a comprehensive evaluation using information obtained from PrintSTEP participants as well as from non-participating printers. The information was collected using the techniques summarized in Table 1.

Table 1: Mechanisms Used to Collect Data to Evaluate PrintSTEP Program

Mechanism	State Agencies	Printers	Public	Information Collected
Telephone Surveys: *Baseline, midpoint and endpoint*		X		Participating printers' pre-PrintSTEP understanding of regulations, motivation to join PrintSTEP, and experiences with PrintSTEP. (qualitative)
Applications: *Baseline and endpoint*		X		Participating printers' air, hazardous waste, water, storm water, and pollution prevention data. (quantitative and qualitative)
State Databases: *Baseline and endpoint*		X		Nonparticipating printers' air and hazardous waste data. (quantitative)
Interviews: *Baseline and midpoint*	X			With state personnel — Agency function and organization pre- and post-PrintSTEP and implementation experiences. (qualitative)
Questionnaires: *Endpoint*			X	With stakeholder advisory group participants — Public interest in PrintSTEP. (qualitative)

Printers: Telephone Survey and PrintSTEP Application Forms

It is critical to the evaluation to understand how printers view the PrintSTEP program, how their environmental performance changed, and what they see as the drawbacks to program participation. Printers were interviewed by telephone three times over the course of the pilot: at the start (baseline) of the pilot, midway through the pilot, and again at the end of the pilot. The Baseline survey established a starting point against which subsequent measures were compared. The midpoint survey collected information on the printers' opinions about the initial application process and initial changes they made at their facility. This information is likely to be more accurate if collected at an interim point than it would be if it were collected at the end of the pilot, when recall wouldn't be as strong and greater staff turnover could occur. Instead, the endpoint survey focused primarily on overall satisfaction with the program and assessing the burden of the pilot on participants; areas where any impacts are not likely to be as evident earlier in the program. The national PrintSTEP team provided significant input into the survey instruments. A sample survey instrument, the end-point survey for printers, is provided in Appendix B.

In addition to the telephone surveys, the PrintSTEP Application provided data on air emissions, hazardous waste generation, stormwater and wastewater status, as well as background information characterizing the facility by type of printing operations and number of employees. Participating printers completed the Application upon joining PrintSTEP, and provided updated information at the end of the pilot. A sample application form, used in New Hampshire, is provided in Appendix C.

Initially the pilot evaluation design called for a "control group" of printers that did not participate in the pilot. The purpose of a control group was to account for confounding factors (e.g., changes in the economy or in technologies) that might undermine the ability to attribute observed changes to the PrintSTEP pilot. However, as the PrintSTEP program was implemented, stakeholders determined that obtaining the participation of printers who were not engaged in PrintSTEP was not realistic. Based on input from printers and the national PrintSTEP team[0], it was clear that printers who did not volunteer to be a part of PrintSTEP were unlikely to voluntarily complete the surveys necessary for evaluation purposes. Therefore, to account for changes occurring during the pilot that may be sector-wide, rather than attributable to PrintSTEP, the evaluation took into account data on non-PrintSTEP printers from existing state databases; data on both air emissions and hazardous waste generation were available for the non-participants.

State Agency: In-person and Telephone Interviews

With regard to state environmental agencies, the critical outcome to be evaluated was efficiency: was the PrintSTEP approach more or less efficient than the traditional approach? In-person interviews were conducted with state government personnel at the baseline, and telephone interviews were conducted toward the end of the pilot. Questions about the organization of media programs and multi-media office coordination were explored, as well as staff's opinions on the costs and benefits of PrintSTEP. The PrintSTEP Coordinator for each pilot was also asked to collect information on the length of time it took to process permits under the traditional system compared to the time to implement the PrintSTEP pilot.

Community: Questionnaires

To evaluate the effectiveness of the public involvement component of PrintSTEP, a survey of participating community members was originally planned as part of the PrintSTEP evaluation. However, because no individual community members commented on any PrintSTEP Applications or placed their names in the PrintSTEP Registries, this survey could not be administered. Instead, the PrintSTEP Coordinators solicited comments from their Stakeholder Advisory Groups on the community involvement aspect of PrintSTEP. This approach was used to gather as much information as possible on why there was such limited interest from the public.

Evaluation Limitations

In reviewing the findings presented in this report, it is important to keep the limitations of this study in mind:

- For each round of telephone surveys, multiple attempts were made to contact every participating printer, however, not all participants responded. The decreased response rate at the endpoint could influence the findings presented in this report. If there are significant differences between the respondent population and non-respondents, the survey results may not accurately reflect the opinions and activities of all participants.

Number of PrintSTEP Participants and Survey Responses		
	St. Louis,Missouri	New Hampshire
Initial Participants	11	47
Endpoint Participants	9	45
Endpoint Annual Reports Received	8	40
Respondents to Baseline Survey	11	47
Respondents to Midpoint Survey	8	43
Respondents to Endpoint Survey	7	31
Sources: Missouri and New Hampshire PrintSTEP Applications, Annual Reports, PrintSTEP pilot baseline, midpoint, and endpoint telephone survey of participating printers.		

- The findings of the evaluation are only as accurate as the information provided by respondents. In some cases, interviewees may have misinterpreted questions or inadvertently reported inaccurate information. In addition, some respondents may not have been fully aware of which aspects of the pilot were attributable to PrintSTEP and which were related to existing requirements that they had not known about. For example, New Hampshire's air toxics requirements were in effect well before PrintSTEP, however many printers were not aware of the requirements until they joined PrintSTEP. This led some printers to associate the burden of calculating their air toxics with PrintSTEP when, in fact, they were subject to this requirement regardless of PrintSTEP.
- Overall, given the number of participants in PrintSTEP versus the number of printers nationwide, it's unrealistic to apply the results presented in this study to the printing industry as a whole.
- The influence of confounding factors on the findings was minimized through the use of state-level data for non-PrintSTEP printers. Comparing PrintSTEP changes over time to the changes for these non-PrintSTEP printers was intended to account for industry-wide trends that are not unique to pilot participants, such as changes in economic conditions or printing technologies. While the data used accomplished this to some degree, the only data available were from state databases for air emissions and hazardous waste. The states maintain this type of data only for facilities meeting certain thresholds. Thus, smaller facilities are typically not included. Printers are typically small facilities, and so the comparison was likely not of equals. However, the non-PrintSTEP printer data were examined from the perspective of a percentage change over time to mitigate the impact of confounding factors.

Implementation of the PrintSTEP Pilots

Description of the Pilot Programs in Each State

Initially, a total of 61 printers participated in PrintSTEP in two states. In Missouri, where the program was implemented in the St. Louis region, 11 printers initially joined.[1] If a participating printer had any existing permits, such as would be required if their air emissions exceeded state or federal thresholds, these permits were referenced (but not replaced) in the PrintSTEP Agreements. In New Hampshire, where the program was implemented statewide, 50 printers participated, and PrintSTEP Agreements replaced any new permits that may have been required. Each state chose their approach based on the legal advice received within their state agency. In both states, participation was voluntary and both pilot areas included participating and nonparticipating printers.[2] At the end of the pilot, data from nine participants from Missouri and 40 from New Hampshire[3] were included in the evaluation.

The state environmental agencies for both pilots received an EPA cooperative agreement to administer the pilot project. Each state agency used a portion of their grant funding to hire a PrintSTEP Coordinator whose role was to administer the program, refine the PrintSTEP template developed nationally to meet state/local needs, recruit printers, and provide on-going technical assistance to participants.

The **Missouri** PrintSTEP pilot was formally launched in 2001, and Notifications and Agreements were finalized early in 2003. PrintSTEP was administered by the Missouri Department of Natural Resources (DNR), Division of Environmental Quality. In Missouri, the PrintSTEP pilot was implemented in the St. Louis area, overseen by the Air and Land Protection Division with day-to-day activities directed by the PrintSTEP Coordinator. The Coordinator worked closely with the Missouri Air Conservation Commission and the Metropolitan St. Louis Sewer District during the pilot development, as described below.

The **New Hampshire** PrintSTEP pilot was implemented statewide by the New Hampshire Department of Environmental Services (NHDES) Small Business Technical Assistance Program (SBTAP). The program was launched in 2001, with Applications received in 2002 and Notifications and Agreements finalized in 2003. SBTAP's Small Business Ombudsman oversaw the pilot, with day-to-day activities directed by the state PrintSTEP Coordinator. The Coordinator worked with NHDES air, water, and hazardous waste staff as needed to implement the pilot. The media offices were involved with up-front development of the

[1] Two of these printers dropped out early in the pilot; one closed owing to a fire and the other declared bankruptcy.
[2] New Hampshire has a total of approximately 300 printers statewide.
[3] One printer in Missouri failed to submit a report because the company went bankrupt. Five of the New Hampshire printers failed to submit their endpoint report, and two formally dropped out of the program.

program, but were not involved in the Application process or in assisting printers throughout the pilot. The local trade association, Printing Industries of New England (PINE), was also substantively involved. PINE participated in the training workshops, as well as assisting printers with the application process. The Small Business Development Center (SBDC), a non-profit organization that provides free technical assistance to businesses in NH, also participated in the workshops and assisted printers in applying to the program.

NH DES intends to continue the PrintSTEP program within the state beyond the life of the pilot and the EPA cooperative agreement.

Streamlining and Interagency Cooperation

In **Missouri**, interagency cooperation resulted in two actions that helped streamline regulations for printers in St. Louis:

- **Permit variance from the Missouri Air Conservation Commission.** The PrintSTEP program was designed to provide flexibility for printers when they needed to add new equipment that would increase air emissions. In the pilot, emissions could be increased within the printer's PrintSTEP air level with a simple notification to Missouri DNR and no further requirements. Modification of the Agreement, with associated public participation requirements, was only necessary when the facility's air level was going to be exceeded. Because this approach was at odds with state air pollution rules, the Missouri Air Conservation Commission agreed to grant a variance from the air pollution construction and operating permit rules. This variance was reinstated each year of the program.
- **Memorandums of understanding (MOUs).** MOUs were agreed to and signed by the Missouri DNR with the following local regulatory agencies:
    - City of St. Louis, Division of Air Pollution Control.
    - St. Louis County Health Department.
    - Metropolitan St. Louis Sewer District.

Development of MOUs was necessary because the participating printers operate within the jurisdictional boundaries of these agencies. The MOUs allowed Missouri DNR to conduct PrintSTEP within the local regulatory agency's jurisdiction in a cooperative and coordinated manner. No changes were made to the local fee and reporting structures. The local agencies were also instrumental in the development of the state PrintSTEP reporting methods themselves.

Under a supplemental cooperative agreement with EPA, the MO DNR developed a multi-media annual reporting form. Because this form was not completed as part of the original PrintSTEP grant or in time for implementation under this pilot, it is not evaluated in this report, but is available from the MO DNR.

In **New Hampshire**, formal interagency cooperation was not needed in the same way as in Missouri. Every media included in the New Hampshire PrintSTEP program is regulated at

the state level, with the exception of storm water (federal) and waste water (local). The New Hampshire PrintSTEP program had the flexibility to combine all the rules into one program.

Outreach by the States

In **Missouri,** the PrintSTEP Coordinator visited each participating facility at least twice, the first time to introduce the printer to the program and a second time to help the printer complete the Application form. During these visits the Coordinator suggested changes to improve environmental performance and compliance, as described later in the report. Throughout the pilot, the Coordinator assisted the printers with process changes, annual reports, and other issues.

Missouri's outreach activities to inform printers and the public about PrintSTEP included the following:

- **Formation of a stakeholder advisory group**. A St. Louis PrintSTEP stakeholder advisory group (SAG) was established in December 1999. The group worked with Missouri DNR to determine how to implement the local PrintSTEP program. Representatives from the Missouri DNR, the Rainbow Chamber of Commerce, the Wesley House Association, the American Lung Association of Eastern Missouri, Commercial Lithographic Company, Conservation Federation of Missouri, Fleming Promotional Graphics, Printing Industries of St. Louis, and the U.S. Environmental Protection Agency Region 7 office took part. The SAG met 20 times during the project and was substantively involved throughout the program.
- **Incorporatation of input from the SAG**. The SAG customized the PrintSTEP program design and worked together to complete the background and outreach materials for the pilot.
- **Development of a community handbook and brochure**. The SAG published the St. Louis PrintSTEP Community Handbook and brochure in December 2001. The handbook was intended to help community members participate by explaining the PrintSTEP process and the environmental requirements faced by printers.
- **Development of press releases**. Missouri PrintSTEP issued two press releases in December 2001.
- **Publication of newspaper articles**. Two local newspaper articles were published to inform the general public about the PrintSTEP program.
- **Publication of articles in newsletters**. Three industry organization newsletters published articles about the Missouri PrintSTEP program to inform printers about the pilot.
- **Placement of a radio announcement**. Missouri PrintSTEP placed one radio announcement.
- **Establishment of public information repositories**. Public information repositories were established and maintained detailed reference information about PrintSTEP and its participating printers. The repositories were located at six St. Louis county libraries and two local Missouri DNR offices near the PrintSTEP printers to improve public accessibility.

- **Establishment of a PrintSTEP website**. Missouri DNR developed a PrintSTEP website (http://www.dnr.mo.gov/printstep/index.html) that maintained detailed information about PrintSTEP and participating Missouri printers.
- **Contact with local officials**. Letters were sent to local elected officials to inform them of the printers participating in their area and to highlight the public involvement component of the program.
- **Hosting of introductory breakfast workshop**. A workshop was held to introduce the PrintSTEP program to local printers. The workshop was led by the PrintSTEP Coordinator together with printing trade association representatives.
- **Training of State and Federal Regulatory Personnel** To assist the state and federal regulatory personnel in understanding both the industry and applicability of the PrintSTEP program, national trade association representatives conducted informational training on the printing industry. This helped to set a baseline of knowledge for all regulatory personnel involved in the development of the program.

Some participating printers conducted additional public outreach, as described in the *Impact on Public Involvement* section of this report.

In **New Hampshire**, the PrintSTEP Coordinator and other state agency staff involved in implementing PrintSTEP conducted extensive outreach. NH DES strongly encouraged printers to join and offered to work with printers to ensure that they were in compliance. Every eligible printer in the state was called encouraging them to attend informational workshops. New Hampshire had several people working on recruiting printers and offering help with applications, including on-site assistance. Overall, an estimated 35 out of 47 printers applying to the program received technical assistance on their Application. This assistance fostered a relationship between the printers and the state agency so that printers were comfortable contacting the agency to ask questions throughout the length of the pilot. For example, following the announcement of new, statewide regulatory changes regarding hazardous waste requirements, the PrintSTEP Coordinator sent each participating printer a letter. She received many follow-up phone calls and was able to assist those printers directly.

NH's outreach activities to inform printers and the public about PrintSTEP included the following:

- **Formation of a stakeholder advisory group**. The New Hampshire PrintSTEP stakeholder advisory group, called the PrintSTEP Stakeholder Group (PSG), was established in 2000. Representatives of New Hampshire DES, the EPA, environmental justice groups, printing organizations, trade associations, the Audubon Society, and legislative affiliations were invited to participate as stakeholders. The PSG was invited to provide input and guidance to the New Hampshire DES on how to implement the PrintSTEP program. More than 10 stakeholders meetings were held over the duration of the program. However, the PrintSTEP Coordinator and other government stakeholders judged that while the PSG was initially strong, after the first few meetings, members

representing community interests no longer participated. The Coordinator interpreted this lack of participation as possibly a result of sporadic communication from the pilot staff to PSG members, as well as limited interest.

- **Hosting workshops for printers**. Twelve workshops were held for printers at different times and locations throughout the state to introduce them to PrintSTEP and to assist with the application process. Several New Hampshire DES staff and PSG members were extensively involved in these workshops, including staff from the SBDC, PINE, and the SBTAP.
- **Development of a community handbook**. A community handbook was developed in January 2001 and made available to those interested. The handbook was intended to help communities participate in the pilot by explaining the PrintSTEP process and the environmental requirements faced by printers.
- **Publication of a press release**. The general public was introduced to the PrintSTEP program in a press release distributed to various newspapers around the state at the initiation of the program.
- **Publication of articles in a newsletter**. The PrintSTEP staff wrote articles for a quarterly newsletter published by the state's small business assistance program and distributed to small businesses in New Hampshire.
- **Publication of a PrintSTEP brochure**. A PrintSTEP brochure was developed and distributed to all identified printers in New Hampshire and to other interested entities.
- **Establishment of public information repositories**. A public information repository was established at the New Hampshire DES offices in Concord, New Hampshire. The repository maintained information about PrintSTEP and its participating printers. For printers with Agreement status, information repositories were also established in the town offices of the towns where the participating printers were located.
- **Establishment of a PrintSTEP website**. To improve information access beyond the information repositories, the New Hampshire DES developed a PrintSTEP website (http://des.nh.gov/SBTAP/printstep/). The website maintained references and information about PrintSTEP and its participating printers, including each printer's application information.
- **Publication of legal notices in local newspapers**. To inform members of the public that a printer in their area submitted a PrintSTEP Application for an Agreement, New Hampshire DES published legal notices in local newspapers. A second legal notice was also published when the Agreement was drafted.
- **Contact with local officials**. Legal notices were sent to local elected officials to inform them of the printers with Agreement status participating in their area.

Some participating printers conducted additional public outreach, as described in the *Impact on Public Involvement* section of this report.

PrintSTEP Participants

In St. Louis, **Missouri**, a total of 11 printers joined the PrintSTEP pilot: four printers signed PrintSTEP Agreements with Missouri DNR, and seven printers with lower release amounts qualified for PrintSTEP Notifications. Of the printers with Agreements, two qualified for an Agreement based on air emissions of volatile organic compounds (VOCs) and two qualified based on their hazardous waste generation. By the end of the pilot, one PrintSTEP printer had merged with another PrintSTEP printer after a fire closed its business; one went bankrupt. The MO pilot ended with nine participating printers, but endpoint information for the evaluation was received from eight printers as another participant went out of business.

In **New Hampshire**, 50 printers joined the PrintSTEP pilot; however, three of these printers joined after the initial application period and therefore, were not included in the evaluation. The majority of the participants are small businesses with lesser emissions and discharges; as a result, they maintained Notification status. Three New Hampshire printers signed PrintSTEP Agreements, primarily due to having air emissions above threshold levels. Two printers, both with Notifications, asked to be taken out of the program and another five did not submit endpoint information. As a result, data on 40 NH printers are included in the evaluation.

Table 2: PrintSTEP Printers

State	Baseline Data Received			Endpoint Data Received		
	Total	Notifications	Agreements	Total	Notifications	Agreements
Missouri	11	7	4	9	6	3
New Hampshire	47	44	3	40	37	3

Participating printers were required to complete a PrintSTEP Application when they joined the program. The Application requested information describing their facility's characteristics, environmental releases, and pollution prevention activities. Each printer was again asked to update the information on their original Application at the end of the pilot. Information for the years 2001 or 2002, and 2004 was collected. Variation in the baseline date occurred depending on exactly when a printer joined the program.

As shown in Table 3, endpoint information was received from eight printers in Missouri and 40 printers in New Hampshire. The table also indicates the total number of employees at the participating facilities and the range of employees at the printing facilities.

Table 3: PrintSTEP Printers						
State	Number of Facilities Participating*		Number of Employees at Baseline		Number of Employees at Endpoint	
	Baseline	Endpoint	Total	Range	Total**	Range
Missouri	11	8	1,023	12–320	706	14–200
New Hampshire	47	40	1,157	1–190	1,105	1–190
TOTAL	**56**	**48**	**1,987**		**1,811**	
* This number reflects the number of printers that submitted data and are therefore included in this evaluation. ** One printer from New Hampshire did not provide employee data in the endpoint.						
Source: Missouri and New Hampshire PrintSTEP Applications and Annual Reports.						

Table 4 presents PrintSTEP printers by their print process. Note that facilities may have more than one printing process.

Table 4: Type of Printing Operations						
Printing Process	Number of Facilities					
	St. Louis, Missouri			New Hampshire		
	Baseline	Endpoint	Percentage Change (%)	Baseline	Endpoint	Percentage Change (%)
Sheetfed Lithography	6	4	—	27	29	7
Nonheatset Web Lithography	1	2	100	3	4	33
Heatset Web Lithography	1	0	—	3	3	—
Flexography	1	1	—	3	3	—
Screen Printing	1	1	—	6	6	—
Gravure	0	0	—	0	0	—
Digital	3	4	100	5	7	40
Prepress	8	6	—	n/a	n/a	n/a
Source: Missouri and New Hampshire PrintSTEP Applications.						

As shown in Table 4 and described elsewhere in this report, some PrintSTEP printers exhibited growth during the pilot period by adding presses and expanding operations. It's also notable that PrintSTEP printers mirrored the sector-wide trend seen over these years of adding digital capability while maintaining operations of their other processes.

Table 5 illustrates how the PrintSTEP printers compared with the general population of printers. As seen in the table, the distribution of printing types for PrintSTEP printers based on their primary printing process at the pilot endpoint is fairly representative of state and national distributions, with a slightly greater proportion of flexographic printers in the PrintSTEP population. This difference may reflect double counting in those cases where a printer had multiple printing processes on site.

Table 5: Type of Printing Operations (at endpoint)								
Printing Process	Percentage of Facilities				Average Number of Employees per Printer			
	For PrintSTEP Printers		By State		For PrintSTEP Printers		By State	
	MO	NH	MO	NH	MO	NH	MO	NH
Lithography	66%	90%	78%	77%	54	28	18	17
Flexography	13%	8%	5%	2%	140	118	30	95
Screen Printing	13%	15%	15%	21%	97	10	14	16
Source: Missouri and New Hampshire PrintSTEP Applications; U.S. Census Bureau, County Business Patterns, 2003; available at: http://www.census.gov/epcd/cbp/view/cbpview.html								

Motivations for Joining PrintSTEP

The developers of PrintSTEP felt it was important to understand the participating printers' motivations for joining the pilot. This information helps to determine whether PrintSTEP meets the expectations of its participants and also provides valuable input in the development of future voluntary programs. The information presented in this section is based on the participants' responses to the baseline telephone survey.

Printers expressed a variety of motivations for joining PrintSTEP; the most frequent response was that they joined to improve their environmental compliance and better understand their environmental requirements. Of the 58 printers responding, 67% (39 of 58 printers) stated compliance and better understanding of the requirements as their motivation for joining. Specifically, printers said:

- "We're a small business, so I thought it would be a good way to learn the regulations."
- "Primarily, I wanted to make sure we were in compliance."
- "I knew there were regulations, and I wanted to make sure we were in compliance."

The next most frequent response was saving time and effort; however, this reason was a distant second with 14% (8 of 58) of printers giving this response. Specifically, printers commented:

- "I like the simplified reporting with one-stop shopping for information."
- "[I want to] minimize time and effort for reporting."

Table 6 summarizes all responses.

Table 6: Reasons Why Printers Chose to Participate in PrintSTEP	
Reason	Percentage Responding
Improve compliance/better understand environmental requirements/improve environmental performance	67% (39/58)
Minimize time and effort for environmental requirements/simplified reporting/single cross-media contact	14% (8/58)
Worried about being targeted for inspections if their facility did not join	9% (5/58)
Community responsibility of public image	5% (3/58)
Encouraged by state or trade association	5% (3/58)

Impacts of PrintSTEP

Impact on Environmental Protection and Practices

This section presents information on changes in environmental practices and results from PrintSTEP. Specifically, changes in environmental outcomes, pollution prevention, and regulatory compliance are presented. In addition to overall environmental improvement, the main pillar of PrintSTEP addressed by this information is:

- **Pollution Prevention.** PrintSTEP was designed to encourage pollution prevention by providing technical assistance and showing that the level of regulatory oversight is proportional to the level of waste or emissions.

Quantitative information was obtained to assess changes in environmental releases, discharges, and practices for PrintSTEP printers as well as for non-PrintSTEP printers. The years examined were 2001 and 2004.

For PrintSTEP printers, the information used in this evaluation was reported on the PrintSTEP Application, and then again in a final report in the same format as the original Application. The following information was obtained from PrintSTEP printers to evaluate environmental outcomes:

- Waste water management method.
- Storm water exposure status.
- Hazardous waste generation and Resource Conservation and Recovery Act (RCRA) generator status.
- PrintSTEP air level.
- VOC and regulated toxic air pollutant (RTAP) emissions.[4]
- Public participation activities.
- Pollution prevention activities.
- A production activity indicator (PAI) chosen by the facility to normalize data to account for changes in production.

To account for changes occurring during the pilot that may be sectorwide rather than attributable to PrintSTEP, data were examined using available information on non-PrintSTEP printers from existing state databases. The following data were obtained on non-PrintSTEP printers:

- Quantity of hazardous waste manifested.[5]
- VOC or RTAP emissions.

[4] In Missouri, VOC emissions were reported. In New Hampshire, RTAP emissions were reported. RTAPs include VOCs, hazardous air pollutants (HAPs), and other toxic air pollutants.

[5] Note that PrintSTEP printers reported waste generated, while state databases capture waste that is manifested. This difference does not affect the analysis, as only relative change is examined and quantitative differences between the two populations are not directly compared.

For these two parameters, data were available for only those printers that were RCRA large quantity generators (LQGs) or that had an air permit. Nonetheless, this information provides additional insight into changes observed in participants' environmental characteristics and helps to determine whether changes were a result of the pilot or of factors influencing the industry as a whole. Waste water is managed at the local level, so data on this release and others were not available. In place of the PAI used for PrintSTEP printers, state-specific normalizing factors were used to account for changes in industry activity level in the non-PrintSTEP population.[6]

Air Emissions

In most types of printing processes, air emissions are printers' primary environmental concern. Typically, printing operations may release VOCs, a contributor to ground-level ozone, and hazardous air pollutants (HAPs), also known as air toxics.

VOCs used at printing facilities are typically found in inks, coatings, adhesives, cleaning solutions, and fountain solution/fountain solution additives. Depending on the amount of these chemicals used, a printing facility participating in PrintSTEP was placed into different "levels" for air emissions, which were used to determine the facility's environmental requirements. PrintSTEP 's five air levels ranged from Level 1, representing the lowest air emissions, to Level 5, representing the highest. Tables 7 and 8 present each air level and its corresponding volume of VOC material for Missouri and New Hampshire, respectively. Facilities also estimated their HAPs as another factor in determining their air level.

The national PrintSTEP team provided a tool to simplify these VOC and HAP calculations for printers by developing "material use worksheets." These worksheets allowed the printers to calculate their quantities of VOC-containing materials used in one year. Air levels are based on this quantity of material actually used, rather than on having to calculate emissions. Given that quantities of materials used are usually readily available through purchasing or inventory records, these worksheets set out to simplify the VOC and HAP estimation process for printers. The following tables also illustrate how two different states implemented the PrintSTEP program to coordinate with specific state requirements.

[6] The normalizing factor is based on the U.S. Census Bureau 2000–2003 change in number of employees for each state's commercial lithographic, gravure, flexographic, and screen printing industry. Printing support services are not included.

Table 7: Material Use Air Level Table for VOCs — Missouri			
Air Level	Sheetfed Offset or Nonheatset Web Lithography, or Screen Printing	Heatset Web Offset Lithography, or Flexography or Rotogravure with Solvent-Based Inks	Flexography with Water-Based Inks
Level 1	Less than 2,855 gals	Less than 20,000 lbs	Less than 80,000 lbs
Level 2	2,855–7,135 gals	20,000–50,000 lbs	80,000–200,000 lbs
Level 3	7,135–14,275 gals	50,000–100,000 lbs	200,000–400,000 lbs
Level 4	14,275–28,550 gals	100,000–200,000 lbs	400,000–800,000 lbs
Level 5	more than 28,550 gals	more than 200,000 lbs	more than 800,000 lbs
Source: Missouri Plain Language Workbook.			

Table 8: Material Use Air Level Table for VOCs — New Hampshire			
Air Level	Sheetfed Offset or Nonheatset Web Lithography, or Screen Printing	Heatset Web Offset Lithography, or Flexography or Rotogravure with Solvent-Based Inks	Flexography with Water-Based Inks
Level 1	Less than 1,425 gals	Less than 10,000 lbs	Less than 40,000 lbs
Level 2	1,425–3,560 gals	10,000–25,000 lbs	40,000–100,000 lbs
Level 3	3,560–7,125 gals	25,000–50,000 lbs	100,000–200,000 lbs
Level 4	7,125–14,250 gals	50,000–100,000 lbs	200,000–400,000 lbs
Level 5	more than 14,250 gals	more than 100,000 lbs	more than 400,000 lbs
Source: New Hampshire Plain Language Workbook.			

In Missouri, some facilities determined their PrintSTEP air level range using the material use worksheets, while other printers used the state's Emissions Inventory Questionnaire (EIQ). The EIQ requires facilities exceeding the reporting threshold of 876 pounds of VOCs, or 20 – 200 pounds of HAPs (depending on the "category" of the HAP) to submit data on their actual VOC or HAP emissions. This measurement method differs significantly from the material use worksheets, but several facilities had already calculated their VOC emissions to meet their EIQ requirements, so the EIQ was the easiest method for them.

In New Hampshire, each facility determined its VOC and HAP air level based on material use, as well as its air level based on emissions of RTAPs. An evaluation of RTAP emissions is required by the state's Air Toxics Rule. A permit is required for facilities that exceed a VOC, HAP or RTAP threshold. None of the PrintSTEP printers exceeded the HAP or RTAP threshold. Three printers exceeded the VOC threshold and therefore required an air permit which was incorporated into the printer's PrintSTEP Agreement.

Table 9 presents the number of PrintSTEP printers at each air level at the beginning and end of the PrintSTEP pilot. The purpose of collecting and presenting air level information is to determine if printers changed their air emissions through participation in PrintSTEP. As can be seen in the table, most printers have low emissions. They fall within PrintSTEP Level 1 and remained there over the course of the pilot. One printer in Missouri moved up to Level 2 because they changed their product mix from black and white on newsprint to multicolor advertising pieces requiring more ink to be consumed.

Table 9: PrintSTEP Printers Air Level

Air Level	Missouri (VOCs) Number of Printers		New Hampshire (VOCs) Number of Printers	
	Baseline	Endpoint	Baseline	Endpoint
Level 1	9	5	37	30
Level 2	2	3	0	0
Level 3	0	0	0	0
Level 4	0	0	3	3
Level 5	0	0	0	0

Source: Missouri and New Hampshire PrintSTEP Applications.

Table 10 shows the number of PrintSTEP printers for which air emissions increased or decreased between the baseline and endpoint of the pilot. Air emission data differed in the two pilot programs owing to differences in state-specific air requirements. On the New Hampshire PrintSTEP Application, printers recorded their VOC emissions by level (VOC Level 1, 2, 3, 4 or 5) and their RTAP emissions by level (RTAP Level 1, 2) as well as actual RTAP emissions. For the Missouri Application, printers recorded their actual VOC emissions and VOC level. This distinction does not affect the results presented in this report because printers were compared only with other printers within their state. As shown in the table, six printers in Missouri increased air emissions over the life of the pilot, while one decreased. In New Hampshire, a majority, or 58% of printers (22 of 38) decreased emissions. Across both states, 51% of PrintSTEP printers (23 out of 45) demonstrated a reduction in air emissions during the pilot. The average percentage change shown in the last column of the table is based on average quantities released for each printer. The average percentage change shows an increase although decreases did occur for more than half of the printers. This apparent discrepancy is because the magnitude of emission increases exceeded decreases when the whole group is examined.

Table 10: PrintSTEP Printers Change in VOC/RTAP Emissions					
State	Number of Facilities*	Decreased	Increased	Unchanged	Average Percentage Change
Missouri	7	14% (1/7)	86% (6/7)	0	+27%
New Hampshire	38	58% (22/38)	37% (14/38)	5% (2/38)	+42%
TOTAL	**45**	**51% (23/45)**	**44% (20/45)**	**4% (2/45)**	
Note: Change in emissions was normalized based on production activity indicators provided by the facilities. *The number of facilities that submitted endpoint data on air emissions and had air emissions.					
Source: Missouri and New Hampshire PrintSTEP Applications.					

For comparison purposes, Table 11 illustrates non-PrintSTEP printers' VOC emissions. These data reflect printers with air permits, as such printers are the only facilities required to report VOCs to the state agency. Data were obtained for 13 printers in Missouri and three printers in New Hampshire. Results show a majority of printers (10 out of 13 printers, or 77%) increased VOC emissions in Missouri, while in New Hampshire all three printers reduced VOC emissions. Overall, 63% of non-PrintSTEP printers (10 out of 16) showed an increase in VOC air emissions during the pilot.

Table 11: Non-PrintSTEP Printers Change in VOC Emissions			
State	Decreased	Increased	Unchanged
Missouri	23% (3/13)	77% (10/13)	0
New Hampshire	100% (3/3)	0% (0/3)	0
TOTAL	**38% (6/16)**	**63% (10/16)**	**0**
Note: Gross amount of emissions was normalized based on the change in the number of employees from 2000 to 2003 for each state's commercial lithographic, gravure, flexographic, and screen printing industry.			
Sources: Missouri's Department of Natural Resources and New Hampshire's Department of Environmental Services, 2001 and 2004 data; and (U.S. Census Bureau, County Business Patterns, 2003; available at: http://www.census.gov/epcd/cbp/view/cbpview.html			

From these limited data it can be observed that the pilot group had better performance than the non-PrintSTEP group, with 51% of facilities decreasing air emissions as compared with 38% in the non-PrintSTEP group. Note, however, that sample size for non-PrintSTEP printers is small compared with the universe of printers in each state.

Looking at the states individually, in New Hampshire, a majority of both PrintSTEP and non-PrintSTEP printers showed decreases in emissions during the pilot (58% and 100%, respectively). In Missouri, a minority of both PrintSTEP and non-PrintSTEP printers showed decreases in emissions (14% and 23%, respectively). It is notable that Missouri has a very small sample of printers from which to collect data. In both states, measurement in the PrintSTEP group was likely to be more accurate than for the non-PrintSTEP group owing to direct technical assistance from the PrintSTEP Coordinators. It may also be generalized that these printers tended to be more robust economically, as they are a self-selected group

interested in participating in an innovative environmental program. In Missouri, increases in VOCs can be attributed to changes at specific printing facilities:

- One printer changed to a higher VOC coating for performance reasons (i.e., so that signs now last longer).
- Another printer changed its market, eliminating gluing and expanded printing. This change increased its use of isopropyl alcohol and its emissions of VOCs.
- Two printers added presses. One of these printers also eliminated the use of all VOC-free products because they were expensive and the printer found the products didn't perform well for its printing applications.
- Another printer added four new production and printing units over the three-year period.

Hazardous Waste

Typical printer wastes that may be considered hazardous include some waste inks, waste solvent, spent fixer, processed developer, and solid wastes such as soiled absorbent materials. All hazardous waste must be managed following RCRA requirements to prevent its release into the environment.

Table 12 presents the number of PrintSTEP printers for which hazardous waste generation increased or decreased between the baseline and endpoint of PrintSTEP. As shown in the table, only one of the four Missouri printers generating hazardous waste decreased waste generation during the pilot. In New Hampshire, a majority, or 71% PrintSTEP printers (20) generating hazardous waste decreased their generation. Across both states, 66% of PrintSTEP printers (21 out of 32) decreased waste during the pilot. In some cases, the increases in waste reported can be attributed to improved compliance rates, where facilities that once were improperly disposing of hazardous waste began disposing of it properly and tracking it correctly as a hazardous waste. For specific printers in Missouri, increases in hazardous waste were seen during the pilot, mostly reflecting improved waste management and measurement practices but also owing to the addition of equipment not entirely offset by the printers' Production Activity Index.[7] For example, in one company three events occurred. They began removing more solvent from their wipes before sending them to be laundered and disposed of the additional waste solvent themselves. The same printer conducted a cleanout of outdated product after shifting its product mix, causing a large amount of hazardous waste to be disposed. And lastly, their measurement method changed, resulting in more accurate measures of waste volumes.

The average percentage change shown in the last column of the table is based on average volumes released for each printer. For Missouri, the overall volume increases were greater than the decreases when the group is examined as a whole.

[7] Each printer reported a Production Activity Index (PAI). The PAI indicates the relative change in the facility's level of production between the baseline and endpoint data collection under PrintSTEP. This evaluation used the PAI to determine if a change in emissions/waste was the result of a change in environmental management practices, or if the change was due to increasing or decreasing production.

Table 12: PrintSTEP Printers Change in Hazardous Waste (number of printers)					
State	Hazardous Waste Generation				
	Number of Facilities*	Decreased	Increased	Unchanged	Average Percentage Change
Missouri	4	1 (25%)	3 (75%)	0	+112%
New Hampshire	28	20 (71%)	2 (7%)	6 (21%)	-14%
TOTAL	**32**	**21 (66%)**	**5 (16%)**	**6 (19%)**	
Note: Gross amount of waste generation was normalized based on production activity indicators provided by the facilities.					
*This number reflects the number of printers who submitted endpoint data on hazardous waste and generated hazardous waste. One New Hampshire printer generated hazardous waste at the end of the PrintSTEP pilot but not at the beginning, so no comparisons could be made.					
Source: Missouri and New Hampshire PrintSTEP Applications.					

For comparison purposes, Table 13 illustrates the number of non-PrintSTEP printers showing reduced quantities of hazardous waste manifested. (Non-PrintSTEP printers' data report the amount shipped, or manifested, as opposed to PrintSTEP printers, which reported waste generated. This distinction does not impact the like-to-like comparisons reflected in these tables.) Data were obtained from state databases for 25 and 70 non-PrintSTEP printers in Missouri and New Hampshire, respectively, and showed that 17, or 68%, of printers in Missouri decreased waste while 41% decreased waste in New Hampshire. Overall, 48% of non-PrintSTEP printers in Missouri and New Hampshire decreased waste during the pilot.

Table 13: Number of Non-PrintSTEP Printers — Hazardous Waste Generation				
State	Number of Facilities	Decreased	Increased	Unchanged
Missouri	25	17 (68%)	8 (32%)	0
New Hampshire	70	29 (41%)	41 (59%)	0
TOTAL	**95**	**46 (48%)**	**49 (52%)**	**0**
Note: Gross amount of waste generated was normalized based on the change in the number of employees from 2000 to 2003 for each state's commercial lithographic, gravure, flexographic, and screen printing industry.				
Source: Missouri's Department of Natural Resources and New Hampshire's Department of Environmental Services, 2001 and 2004 data; and U.S. Census Bureau, County Business Patterns, 2003; available at: http://www.census.gov/epcd/cbp/view/cbpview.html				

From these limited data it can be observed that the pilot group showed better performance than the non-PrintSTEP group, with 66% of facilities decreasing hazardous waste generation or manifesting, as compared with 48% in the non-PrintSTEP group.

Looking at the states individually, in New Hampshire a majority of PrintSTEP printers showed decreases in hazardous waste during the pilot. This decrease is notable because during a similar time period, a minority of non-PrintSTEP printers did so. In Missouri, three out of four PrintSTEP printers showed increases while a majority of non-PrintSTEP printers showed decreases (noting that only four printers in the Missouri PrintSTEP group reported any hazardous waste at all). In both states, hazardous waste measurement in the PrintSTEP group was likely to be more accurate than for the non-PrintSTEP group owing to direct technical assistance during the pilot. There were other benefits separate from direct waste reduction. For example, two printers in Missouri changed from an LQG to a small quantity generator (SQG) during the course of the PrintSTEP pilot. This change had the benefit of reducing their regulatory burden, specifically training, reporting, and inspection requirements.

Waste Water

Most printers discharge their process waste water to their local sewer system, which in turn is managed by their local publicly owned treatment works (POTW). The POTW sets minimum requirements for dischargers and treats waste water before discharging it to surface waters.

PrintSTEP printers reported information on waste water discharge status, as shown in Table 14. All participating printers either discharge waste water to a POTW or do not discharge waste water at all. The purpose of collecting and presenting waste water information is to determine if any shifts in waste water management occur through participation in PrintSTEP. The reported data show that the waste water discharge status of PrintSTEP printers did not change in Missouri. In New Hampshire, no net change occurred. One printer previously discharged to a POTW and discontinued discharging effluent. However, another New Hampshire printer that previously did not discharge to a POTW reported the opposite change and now does. In this case, the printer is delivering rinse water from its plate developer to the POTW. Before PrintSTEP, this waste water was going to a holding tank and then was sent out as a hazardous waste. Since joining PrintSTEP the printer has been able to work with the POTW to have its waste water delivered on occasion to the POTW for treatment. Printers discharging to a POTW are not typically required to monitor specific pollutant concentrations; consequently, it was considered too burdensome to require this quantitative information for the purposes of this evaluation.

Table 14: Waste Water Discharge Status						
	Number of Facilities*					
	Missouri			New Hampshire		
	Baseline	End-point	Percentage Change	Baseline	End-point	Percentage Change
Discharge waste water to a septic system	0	0	—	0	0	—
Discharge industrial waste water to the sewer district (POTW)	9	9	—	22	22	—
Designated as a significant industrial user (SIU)**	0	0	—	0	0	—
Discharge waste water directly to surface water (NPDES permit)	0	0	—	0	0	—
No discharge	0	0	—	17	17	—
* This number reflects the number of printers who submitted endpoint data for waste water. ** Any facility that discharges an average greater than or equal to 25,000 gallons per day of process waste water to the sewer system or meets other discharge criteria is considered an SIU.						
Source: Missouri and New Hampshire PrintSTEP Applications.						

Comparison data were not available for nonparticipating printers. Because waste water is controlled at the local level, it was not practical for the pilot states to obtain these data for printers in each municipality.

Storm Water

The Clean Water Act (CWA) also regulates storm water runoff that has been in contact with industrial storage materials, wastes, loading docks, and other potential sources of chemical contamination. These regulations prevent chemicals and wastes from contaminating surface and groundwater. All industrial facilities that potentially discharge storm water containing pollutants to a surface water of the United States must apply for coverage under a NPDES permit. However, a permit is not required at certain facilities that can certify that a “no exposure” condition is maintained. “No exposure” is when all potential sources of contamination are kept under cover, protected from precipitation.

PrintSTEP printers were asked to identify items exposed to precipitation, now or in the foreseeable future, and whether drainage from these areas discharged to any surface waters or to a storm sewer system. The purpose of collecting and presenting storm water information is to determine whether printers changed their storm water management practices through participation in PrintSTEP. This information was reported on a checklist and is summarized in the following paragraphs. Most PrintSTEP printers documented “no exposure” to storm water. Overall, there was no change in Missouri and no net change in New Hampshire for PrintSTEP printers requiring a storm water permit.

Comparison data were not available for printers not participating in PrintSTEP.

Six printers in Missouri and 37 printers in New Hampshire had "no exposure" status at both the beginning and end of the pilot. In Missouri, the remaining printers[8] had storm water permits for the following reasons:

- Materials or products at uncovered loading docks (at endpoint only).
- Materials or products stored outdoors (except for products intended for outdoor use such as cars).
- Materials or products handled/stored on roads or railways owned or maintained by the certifier.
- Waste material.

In New Hampshire, the remaining two printers had storm water permits for the following reasons:

- Materials associated with vehicular maintenance, cleaning, or refueling (endpoint only).
- Spills/leaks resulting from maintenance of stacks of air exhaust systems.

One New Hampshire printer did not report their storm water status at the endpoint.

Use of Pollution Prevention Practices

Pollution prevention means changing operations to generate less pollution in the first place, instead of treating and disposing of it after it is created. Through PrintSTEP, printers had access to free technical assistance to find ways to prevent pollution. PrintSTEP also encouraged pollution prevention by highlighting how a printer's regulatory requirements decrease as the facility's overall potential environmental impact decreases. The fewer pollutant releases a printer has, the fewer the regulatory requirements. As part of their PrintSTEP Applications, printers were asked to review a list of pollution prevention activities and mark which ones they employed. Printers then completed this exercise again at the end of the pilot program. Table 15 summarizes the results of the changes in the pollution prevention activities undertaken by PrintSTEP printers over the course of the pilot program.

Table 15: Pollution Prevention Activities

Pollution Prevention Activities	Number of Facilities Implementing Pollution Prevention Activities					
	Missouri			New Hampshire		
	Baseline	End-point	Increase/ Decrease/ No Change	Baseline	End-point	Increase/ Decrease/ No Change
Eliminated chrome-based cleaners	1	1	—	12	16	▲
Installed and properly maintained silver-recovery units	4	5	▲	18	20	▲

[8] One printer documented more than one exposure type.

Properly maintained film and plate processing units (e.g., flow rates, squeegees, secondary containment, holding tanks, and pipes/tubing)	5	6	▲	n/a	n/a	n/a
Utilized "Code of Silver Practices" steps to recover silver from fixers	2	3	▲	n/a	n/a	n/a
Investigated/used developer and fixer recycling units for film processors*	4	5	▲	13	13	—
Investigated/used low replenishing rate film chemistry*	5	6	▲	22	23	▲
Investigated/used wash water recycling units for film and plate processors*	3	4	▲	12	12	—
Investigated/used digital, dry, or water-based proofing systems*	5	5	—	23	23	—
Instituted an ink inventory system to reduce waste ink disposal costs	6	6	—	n/a	n/a	n/a
Instituted a switch to low-VOC ink systems, such as UV-curable, water-based technology, or vegetable-based ink systems	7	7	—	20	19	▼
*Investigated/used stay open and cartridge ink delivery system for sheetfed offset lithographic inks	1	2	▲	19	19	—
Used chiller recirculators to lower temperature of fountain solutions to reduce evaporation and thus lower air emissions	3	3	—	14	12	▼
Instituted a switch to isopropyl alcohol–free fountain solutions or reduced concentration of isopropyl alcohol in fountain solution	3	3	—	25	25	—
Investigated the installation of filtration system for fountain solution recirculation system	4	4	—	10	9	▼

Switched to low-vapor--pressure or low-VOC cleaning solvents (less than 10 mm Hg at 20 degrees Celsius) to reduce air emissions and quantity of solvent purchased	5	5	—	21	20	▼
Eliminated the use of F-listed solvents and substituted D-listed or nonhazardous solvents to reduce the toxicity of hazardous waste generated	3	5	▲	25	22	▼
Instituted a solvent recycling/reuse system	1	0	▼	7	6	▼
Implemented a shop towel management policy so soiled wipers are stored in closed or covered safety containers to reduce air emissions Instituted a program to recover free liquids from shop towels either on-site or off-site, (i.e., gravity draining via false bottom collection drums, hand wringers, centrifuges, etc.)	5 2	6 6	▲ ▲	35 7	35 7	— —
Implemented a solid waste/recycling program by recycling all possible items from solid waste stream	7	7	—	24	23	▼
Reused and recycled pallets and skids to reduce solid waste	8	8	—	31	31	—
Collected and recycled used oil, other lubricants, and batteries	4	4	—	19	20	▲
Recycled parts washing fluids	4	4	—	8	9	▲
Implemented a program to manage and recycle spent fluorescent and high-intensity-discharge lamps	2	5	▲	24	29	▲
Where possible, used low-solvent, no-solvent, or water-based adhesives and glues	5	6	▲	14	17	▲

Where possible, used low-solvent, or water-based ink-jet inks	1	1	—	13	16	▲
Requested that the vendor take back all samples not consumed	7	7	—	10	14	▲
Used first-in, first-out inventory control system	8	8	—	33	35	▲
Covered all open containers of liquids and kept them closed	8	8	—	38	39	▲
Stored all materials to minimize damage from mishandling or accidents	7	7	—	39	39	—
TOTAL	**130**	**147**	**▲**	**536**	**553**	**▲**
* Indicates that the question asked in Missouri and New Hampshire differs slightly. In Missouri, the printers were asked whether they "investigated the use" of a particular pollution prevention activity. In New Hampshire, the printers were asked whether they "used" a particular pollution prevention activity.						
Note: The "n/a" indicates that the question was not asked on the PrintSTEP Application.						
Source: Missouri and New Hampshire PrintSTEP Applications.						

As seen in Table 15, while new pollution prevention practices were adopted during the PrintSTEP pilot, a few shifts away from some activities also occurred. The last row of Table 15 summarizes this information, showing overall increases in pollution prevention activities during the pilot for printers in Missouri and New Hampshire. Much of this increased activity can be attributed to the direct, on-site technical assistance provided by the PrintSTEP Coordinators, resulting in greater awareness of potential pollution prevention actions. It was also observed that printers who discontinued a pollution prevention practice often had an accompanying elimination of the associated process or equipment at their facility (e.g., silver recovery was no longer used because the printer switched to digital processing and no longer had silver at the facility). Lastly, many PrintSTEP printers were already practicing pollution prevention when they joined the pilot as would be expected from facilities interested in a voluntary program focused on environmental protection.

It was beyond the scope of this study to evaluate whether non-PrintSTEP printers or the sector as a whole changed pollution prevention practices during the same time period.

Regulatory Compliance

Compliance improvements were reported during the PrintSTEP pilot. All but one of the printers in NH were out of compliance prior to joining PrintSTEP. As a result of PrintSTEP, all participants were brought into compliance. The specifics, per pilot state, are discussed below.

In Missouri, the SAG set a requirement that printers applying to PrintSTEP could not have ongoing compliance issues, as a few interested printers did. These issues were resolved before printers joined the program.

- Two printers were discharging silver in concentrations that exceeded the Metropolitan Sewer District limits; these discharges were discovered during the on-site visits. Both facilities had silver capture systems but both had accumulated silver in the lines. After the site visit, the lines were cleaned out. Both printers then changed their prepress workflow and work practices to avoid having to do this again.
- Two printers had storm water permits and were paying storm water fees, but didn't have exposed materials and thus did not require a permit. As a result of PrintSTEP, the permits were rescinded to save the printers and Missouri DNR staff the associated permit renewal fees, paperwork, and administrative time required.

Other waste management problems were resolved through PrintSTEP that were not related to compliance. These problems included assistance to a printer in finding a cost-effective local water-testing laboratory that was approved by the local sewer district and assistance to the city of St. Louis (through the MOU) in resolving an odor complaint against a local printer.

In New Hampshire, all but one of the participating printers were out of compliance at the start of the pilot, primarily related to their RTAP (regulated toxic air pollutant) emissions, storm water, and hazardous waste requirements. These issues, described below, were resolved before or immediately after printers joined the program.

- Most printers had not completed their RTAP demonstrations or their "no exposure" certification for storm water.
- For hazardous waste, many printers didn't know how to characterize their waste or were mischaracterizing their waste, and some printers generating hazardous waste did not have RCRA ID numbers. For example, many printers had questions on the waste classification of metal-containing inks.
- The most frequent RCRA compliance violations were improper labels or absence of labels on waste drums, and improper labeling of waste rag containers.
- For air compliance, recordkeeping to determine annual usage of raw materials was found lacking. Compliance with the New Hampshire DES requirements was too complex for most printers, and PrintSTEP and NHDES were able to provide direct technical assistance.
- One printer was discharging waste water to the septic system and needed to install treatment equipment.

Assistance from PrintSTEP during the application phase brought these facilities into compliance. Further, the process also greatly improved the printers' awareness levels regarding environmental issues. This awareness included reviewing materials before purchasing materials and properly disposing of expired materials or materials the companies no longer used.

During the endpoint telephone survey, printers were asked whether they thought their compliance had improved as a result of PrintSTEP. Overall, 86% of printers replied that their compliance improved, as shown in Table 16.

Table 16: Printers' View of Their Change in Compliance Status During PrintSTEP		
State	Compliance Improved	Compliance Did Not Improve
Missouri	83% (5/6)	17% (1/6)
New Hampshire	87% (26/30)	13% (4/30)
TOTAL	**86% (31/36)**	**14% (5/36)**
Source: PrintSTEP pilot endpoint telephone survey of participating printers.		

It is beyond the scope of this study to evaluate whether the non-PrintSTEP printers or the sector as a whole changed compliance practices during the same time period.

Summary Assessment of Findings on Environmental Protection and Practices

Assessing all pilot parameters as a whole, improvements were observed in some areas while in others little or no change was seen. A greater percentage of facilities reduced air and hazardous waste emissions in the PrintSTEP group than did in the general population of the two states, when corrected for activity level. Other environmental areas were assessed for the PrintSTEP group but not compared with the same areas of nonparticipating printers. For these areas, meaningful changes in performance on waste water and storm water were not seen; however, these areas are not typically the printing sector's primary environmental concern. An increase in pollution prevention activity of an average of 5% in the pilot states was observed. For all of these parameters it should be noted that only a small number of data points were available, in some cases as small as three (e.g., for New Hampshire non-PrintSTEP air emissions data). Lastly, an all-around improvement in compliance and awareness of environmental requirements for all participating printers was clearly seen. This improvement will undoubtedly have future positive impacts in terms of better waste management and recordkeeping practices.

Several PrintSTEP printers in Missouri grew considerably during the pilot, consequently increasing their waste streams. This growth was not always effectively or entirely normalized by the Production Activity Index (PAI) provided by the facilities. For example, one printer added two large presses and increased production considerably, as measured in tons. However, the company cut prices and its profit margin went down at the same time, reflecting the increasingly competitive nature of the industry. This company selected a PAI at the start of the pilot based on sales, which did not ultimately reflect the changes at the facility that would affect environmental releases. The PrintSTEP Coordinators observed that, in many cases, when printers joined the PrintSTEP program they also performed significant housekeeping and cleanouts that could conceal real changes in waste quantities from baseline to endpoint.

Impact on Efficiency of the PrintSTEP Process for Printers

This section presents information on the administrative efficiency of PrintSTEP for printers. The findings are based on phone interviews with the participating printers, as well as interviews with the state PrintSTEP Coordinators.

Two of the four pillars of PrintSTEP were designed to directly improve the efficiency of the regulatory process for printers. These pillars are presented here:

- **Regulatory Simplification**. With PrintSTEP's multimedia approach, printers' waste water, hazardous waste, storm water, and air requirements are all covered in one package. In designing PrintSTEP, regulatory simplification was intended to improve environmental performance while also making the process less time-consuming for printers.
- **Operational Flexibility.** When a printer makes a process change under PrintSTEP, in many cases, no approval is required. If the change does not result in an alteration to the printer's PrintSTEP levels, the changes needed to respond to market demands can be made without waiting for a lengthy approval process.

The following sections address the question of how efficient the PrintSTEP participants found the program to be, and whether it achieved the improved efficiency goals set forth in the program design.

Understanding of Environmental Requirements

Changes in printers' understanding of environmental requirements were assessed. Printers were asked to assess their understanding of the environmental regulations before and after PrintSTEP. All printers felt they had gained a better understanding of their requirements during their participation in the pilot. The PrintSTEP Coordinators confirmed this improvement. Through the application process and the PrintSTEP materials, the participating printers improved their understanding of their environmental requirements.

At the beginning of the pilot, PrintSTEP printers were asked to characterize how well they understood their environmental requirements. At the endpoint, printers were asked to think back and characterize how well they had understood their requirements prior to joining PrintSTEP. Looking back, few printers thought they had had a good understanding of the requirements, as shown in Table 17. Considering air, hazardous waste, waste water, and storm water requirements, printers said they had least understood the air requirements prior to joining PrintSTEP, with only 19% reporting they had had a "very good" or "fairly good" understanding. The PrintSTEP Coordinator noted that the noncompliance issues at the start of PrintSTEP were mainly related to air (primary the New Hampshire RTAP requirements) or storm water requirements, and this observation was confirmed by the responses presented in Tables 17 and 18.

Table 17: Percentage of Printers with a Good Understanding of their Environmental Requirements Prior to PrintSTEP			
	Missouri	New Hampshire	Total
Air	17%	20%	19%
Storm Water	17%	27%	25%
Waste Water	50%	47%	47%
Hazardous Waste	67%	50%	53%
Source: PrintSTEP pilot endpoint telephone survey of participating printers.			

Printers had been asked this same question about their level of understanding of their environmental requirements two years earlier prior to joining PrintSTEP. At that time, many more printers *thought* they understood the requirements. Only after their PrintSTEP participation did they realize that they had not fully understood the requirements. In other words, they didn't know what they didn't know. This change in their perception was the case for every medium, and in both states, but again, was most pronounced for air requirements, as shown in Table 18, representing the responses for both Missouri and New Hampshire combined.

Table 18: Change in Printers' Perception of Initial Understanding of their Environmental Requirements Prior to PrintSTEP			
	% of printers who thought their pre-PrintSTEP understanding was "Good" prior to joining PrintSTEP	% of printers who thought their pre-PrintSTEP understanding was "Good" after two years in PrintSTEP	Difference
Air	49%	19%	-30%
Storm Water	45%	25%	-20%
Waste Water	71%	47%	-24%
Hazardous Waste	71%	53%	-18%
Source: PrintSTEP pilot baseline and endpoint telephone surveys of participating printers.			

The PrintSTEP Coordinators noted that this increased understanding goes beyond regulatory requirements, stating that the PrintSTEP process not only brought the printers into compliance, it also greatly improved their "awareness level" regarding environmental issues. This awareness included knowing to review materials before purchasing them and disposing of expired materials that are no longer used.

When asked why they didn't initially understand the requirements, the reason given most often for all media by the printers was that they were unaware of the regulations. The types of comments received from the printers include the following:

- "At the start of the program, [I was] not sure there were any air requirements."
- "We didn't know we were using hazardous materials."
- "I was new to the industry and didn't think about [the requirements] before PrintSTEP."

Ability to Respond to Business Opportunities

Operational flexibility was one of the pillars of PrintSTEP, and the evaluation sought to determine if PrintSTEP had been successful in providing operational flexibility. The baseline interviews at the start of PrintSTEP revealed that environmental requirements had impeded a business opportunity for only one printer. In the interviews conducted with participating printers two years later, one printer reported that his facility's participation in PrintSTEP enabled the company to quickly and easily respond to market conditions. Additionally, other printers did install new equipment without having to wait for state approval. Further details on situations where PrintSTEP positively impacted business opportunities can be found in the next paragraphs.

In Missouri, one printing facility was able to install an additional sheetfed lithographic press much more quickly than it could have, had the company not been a PrintSTEP participant. The facility first contacted the PrintSTEP Coordinator, who consulted the city's air permit chief. The air permit chief agreed that the new press could be covered under the existing PrintSTEP Agreement. The emissions from the new press were calculated to be 3 tons per year (tpy). Prior to the press installation, the facility's VOC emissions were 12 tpy, thus the additional 3 tons brought the company's total up to a total of 15 tpy. The facility was at PrintSTEP Air Level 2, which covers emissions up to 20 tpy. The PrintSTEP permit process took a total of three days, instead of an estimated three months under the traditional regulatory system. This efficiency saved the facility, state agency, and the city time and expenses in not having to formally undertake the traditional permitting approval process. It was also beneficial that the company had a single point of contact so it was able to find out easily what it did or did not need to do.

Another printer added four flexographic presses during the pilot program. This printer also changed to "zero VOC" inks and did not change their air emissions from the printing operations. A third printer exchanged printing presses in a "like-for-like" swap. The new press was more modern and had greater capacity, but did not increase the air emissions. The process for these facilities only took two days for each permit modification.

In all three situations, the printers remained within the same PrintSTEP air level, therefore, the permit modifications only required a visit from the PrintSTEP Coordinator. Under the traditional regulatory system, these permit modifications could have taken as much as three months and resulted in a 200-page permit request to the state. Instead, the process took only two or three days and saved the facility, the state, and the City of St. Louis the time and expense of the formal permitting process.

Further, some of the participating printers did receive approval of their PrintSTEP Notification or Agreement more quickly than approvals had been received under the traditional regulatory system, as shown in Table 19; an equal number saw no change in the turnaround time.

Table 19: Difference in Turnaround Time between PrintSTEP and the Traditional Regulatory System	
PrintSTEP Comparative Turnaround Time	Percentage of Printers
Shorter	47% (16/34)
About the Same	47% (16/34)
Longer	6% (2/34)
Source: PrintSTEP pilot endpoint telephone survey of participating printers.	

Most of the participants received a PrintSTEP Notification, rather than an Agreement, which does not require an official "approval" from the state agency. These printers for the most part did not have any permits or environmental approvals prior to PrintSTEP either, so it is to be expected that they would not see a significant difference between the two systems.

Value of a Multimedia Approach

The multimedia approach is a key design element of PrintSTEP, contributing to how the "regulatory simplification" pillar is implemented, as well as providing a holistic view of wastes to encourage implementation of the "pollution prevention" pillar. In addition to simplifying and consolidating printers' cross-media regulations, PrintSTEP further implemented a multimedia approach by assigning PrintSTEP Coordinators, who served as a single point of contact to respond to printers' multimedia questions.

Prior to joining PrintSTEP, some of the participants dealt with multiple state contacts for their different environmental media questions and requirements. Only one printer in Missouri and three in New Hampshire identified a single source they could contact for environmental information in their state. Results from the baseline interviews showed that nine printers in New Hampshire (22% of respondents) did not have multimedia releases and therefore did not initially feel the need for a multimedia point of contact. As discussed previously, however, many printers were unaware of their environmental requirements prior to their participation in PrintSTEP. Overall, a majority of printers saw an advantage in having a single point of contact to assist them.

During the course of the pilot, almost all of the printers contacted the PrintSTEP Coordinator, and more than 90% were satisfied with the information they received, including 80% who said they were "very satisfied," as shown in Table 20.

Table 20: Percentage of PrintSTEP Printers Who Contacted Their PrintSTEP Coordinator and Satisfaction Rates

	Percentage of Printers					
	Missouri		New Hampshire		Total	
	First Year	Second Year	First Year	Second Year	First Year	Second Year
Participants Who Contacted Their Coordinator	100% (8/8)	83% (5/6)	87% (33/38)	48% (15/31)	89% (41/46)	54% (20/37)
Participants **Very Satisfied** With Response	100% (8/8)	100% (5/5)	76% (25/33)	93% (14/15)	80% (33/41)	95% (19/20)
Participants **Somewhat Satisfied** With Response	0%	0%	15% (5/33)	7% (1/15)	12% (5/41)	5% (1/20)
Participants **Somewhat Unsatisfied** With Response	0%	0%	9% (3/33)	0%	7% (3/41)	0%
Participants **Very Unsatisfied** With Response	0%	0%	0%	0%	0%	0%

Source: PrintSTEP pilot midpoint and endpoint telephone surveys of participating printers.

In the first year, a few New Hampshire printers said they had not been satisfied with the information they received when they contacted their PrintSTEP Coordinator. These printers stated the following reasons for their dissatisfaction:

- "Spoke with different contacts. No cohesive follow-up."
- "I didn't think program was applicable to my facility."

During this time, changes in staffing for PrintSTEP in New Hampshire likely affected these comments.

In both states, those facilities that did not contact the PrintSTEP Coordinator said no situations arose where help was required.

During the second year of the pilot, about one-half of the participants contacted their PrintSTEP Coordinator, and all were satisfied with the information received. It is important to note here, as with other interview information, that the decrease in response rate for the endpoint survey is likely to have affected these results.

Printers were also asked what effect the multimedia coordination at the state agency had on the turnaround time of the regulatory process. One-half of the Missouri printers and 35% of the New Hampshire printers commented that PrintSTEP's multimedia coordination at the

state agency sped up the regulatory process for them. Most printers thought PrintSTEP had no net effect on the timing of the regulatory process, as shown in Table 21.

Table 21: Impact of the PrintSTEP Coordinators in Expediting the Regulatory Process

PrintSTEP Coordinator Impact	Percentage of Printers	
	Missouri	New Hampshire
Sped up the regulatory process	50% (3/6)	35% (8/23)
Had no effect on the speed of the regulatory process	50% (3/6)	65% (15/23)

Source: PrintSTEP pilot endpoint telephone survey of participating printers.

In addition to tracking how many printers were in touch with the PrintSTEP Coordinator, the outcome of this contact was assessed qualitatively. Contact with PrintSTEP Coordinators often led to improvements at facilities, demonstrating the benefits of a multimedia regulatory approach in terms of both environmental quality and time/money. For example, during the initial application process, the Missouri PrintSTEP Coordinator toured each facility to review and advise the printers on their permitting, air quality, hazardous waste, solid waste recycling, waste water, and storm water procedures. In New Hampshire, however, the PrintSTEP Coordinator judged that state's pilot program should have met more often with participating printers. "The single point of contact is very important to help printers resolve their issues."

One unexpected significant occurrence was the change in New Hampshire's hazardous waste requirements during the PrintSTEP pilot. Both the New Hampshire PrintSTEP Coordinator and one of the PrintSTEP printers mentioned this problem as a major drawback. After the PrintSTEP pilot had started, New Hampshire implemented a Small Quantity Generator (SQG) Self-Certification Program that required additional action on every printer's part. This state requirement was not in effect at the time PrintSTEP was customized for New Hampshire; therefore it was not incorporated into the PrintSTEP workbook or other aspects of the pilot. When the SQG program came into effect, PrintSTEP was no longer a comprehensive multimedia program for many printers as it did not include these new requirements. Several printers voiced complaints about this situation, saying it caused confusion, given that PrintSTEP was advertised as a multimedia program.

It should be noted, however, that the PrintSTEP participants, as a result of being involved in PrintSTEP, received tailored one-on-one assistance to ensure their compliance with this new state requirement; this would not have occurred in the same manner had they not been involved in PrintSTEP.

Costs for Printers

This section discusses participants' time spent on PrintSTEP recordkeeping and reporting requirements as compared to their time spent on these activities prior to joining PrintSTEP. What could not be quantified are the potential costs which printers were able to avoid as a result of PrintSTEP, including but not limited to: potential consulting fees, fines, lost

production due to permit delays, and the additional time spent learning environmental requirements without one-on-one assistance.

Missouri printers did see some reductions in their time requirements, with 67% spending less time on reporting under PrintSTEP, but most showing no improvements in their time spent on recordkeeping, as shown in Table 22. In New Hampshire, approximately one-half of the printers saw no change in the time spent on recordkeeping and reporting, while a fair number said their time spent was greater under PrintSTEP, and a few said their time decreased.

Table 22: Change in Participants' Time Spent on PrintSTEP, as Compared with the Traditional Regulatory System

	Percentage of Participants					
	Missouri			New Hampshire		
	Decreased	Remained the Same	Increased	Decreased	Remained the Same	Increased
Time Spent on Recordkeeping	33% (2/6)	50% (3/6)	17% (1/6)	6% (2/31)	52% (16/31)	42% (13/31)
Time Spent on Reporting	67% (4/6)	33% (2/6)	0%	13% (4/31)	55% (17/31)	32% (10/31)

Source: PrintSTEP pilot endpoint telephone survey of participating printers.

Printers were also asked to quantify how much their time increased or decreased for these activities under PrintSTEP when compared to their requirements prior to joining PrintSTEP. On average, PrintSTEP printers spent 12% more time on recordkeeping under PrintSTEP, and 6% more time on reporting, as shown in Table23.

Table 23: Magnitude of the Change in Participants' Time Spent on PrintSTEP, as Compared with the Traditional Regulatory System

	Average Percentage Change	Range of Change
Time Spent on Recordkeeping	+12%	30% less to 100% more
Time Spent on Reporting	+6%	50% less to 100% more

Source: PrintSTEP pilot endpoint telephone survey of participating printers.

When asked why PrintSTEP took more time, printers generally stated that the additional time was needed because previously they had spent so little time on their environmental requirements. Almost all printers responding to this question indicated that the additional time was worthwhile. Some of the responses included the following:

- "We weren't doing much before, and now we have been keeping better records."
- "We were unaware of regulations at first, so there was a big increase at first, but now it's not that burdensome since I know what I did before."
- "I'm more aware of chemicals going in and out of facility and want to keep better track of what's coming in and out."

- "No one was keeping track of things being filed properly before. I maybe spend 30 minutes a month on it now, which is probably more than was done in the past, since I don't think anyone was really keeping records."

Note that many of the participants were not complying with the environmental requirements prior to PrintSTEP and, as such, had spent little or no time on recordkeeping or reporting. After joining PrintSTEP and coming into compliance, their time spent on these activities increased. For example, in New Hampshire, most printers had not completed their RTAP calculations as required by the state. After joining PrintSTEP, they did learn of and complete their RTAP calculations. This step was perceived by some printers as an additional requirement that they had not performed under the traditional regulatory system, although they should have. One printer who said his time spent on recordkeeping and reporting increased by 80% explained that this increase was primarily owing to the RTAP calculations.

Additionally, for the purposes of this evaluation, PrintSTEP participants were required to submit updated RTAP calculations in 2005 for calendar year 2004. This was required only for the pilot evaluation. For all other years, and for non-participating facilities for all years, annual RTAP emissions are only required to be reported for sources that require permits. Some printers saw this as an additional burden.

Another reason that printers did not generally see reductions in the time spent on their environmental recordkeeping and reporting requirements could have to do with constraints in the implementation of PrintSTEP. For example, the nature of the media-specific fee collection in each state could not be altered. Media-specific programs are funded through fee collection, and fees are collected when reports, such as hazardous waste reports, are submitted. Media-program offices within the state agencies could not allow PrintSTEP to collect the fees or associated reports. As a result, PrintSTEP printers with multimedia requirements still had fees and reporting due at various times throughout the year; this reduced the potential benefits of PrintSTEP that could have been realized if the state agencies had been able to consolidate the collection or fees and/or reports, part of the original design of PrintSTEP.

Summary Assessment of the Efficiency of PrintSTEP for Printers

One of the goals of the designers of PrintSTEP was to offer a streamlined method for printers to address their environmental requirements. This concept of improved "efficiency" encompasses many facets, including the following:

- An easy way for printers to learn about and understand their environmental requirements for all media.
- Improvements in the regulatory process that would allow printers to respond to business opportunities more quickly.
- A multimedia approach that encourages a holistic view of operations so the impacts of any changes are considered across media.

- A process in which recordkeeping and reporting requirements are less time-consuming for printers.

In some of these areas, PrintSTEP offered significant improvements, while in others the pilot had little effect. A summary of each aspect of efficiency for printers follows.

Printers clearly gained an increased understanding of their multimedia environmental requirements. This understanding was their primary motivation for joining the pilot and their improved compliance and responses to the survey questions demonstrate that their understanding did improve.

The PrintSTEP pilot demonstrated that the program has the *potential* to allow printers to respond to business opportunities more quickly. The concept of allowing for operational flexibility and how it was implemented in PrintSTEP appears sound. It may well be a more sought-after or valuable feature in sectors where changes that impact emissions occur more frequently.

Regarding the "holistic view of operations," participants noted a significant value in having a designated PrintSTEP Coordinator in each pilot area. Almost all participants contacted their Coordinator at some point during the pilot; the vast majority were satisfied with their interactions. In several cases, this interaction led to regulatory or environmental improvements.

With regard to time requirements, Missouri printers did see some reductions, with 67% spending less time on reporting under PrintSTEP, although most printers saw no change in the time spent on recordkeeping. In New Hampshire, approximately one-half of the printers saw no change in the time spent on recordkeeping and reporting, while a fair number said their time spent was greater under PrintSTEP, and a few said their time decreased. This finding may be the result of three factors: a) many printers were not meeting their environmental recordkeeping and reporting requirements prior to PrintSTEP and as a result, did not spend any time on these activities prior to the pilot; in fact, almost all of the printers responding to questions indicated that the additional time spent on environmental requirements under the pilot was worthwhile; b) because of constraints within state organizations, there were still some media-specific reports and fees due at various times throughout the year which could not be consolidated; and c) in one pilot state, a new state requirement (the NH SQG self-certification) was introduced after the pilot was launched.

Additionally, most printing facilities are small and are not required to obtain permits such as state operating permits for their air emissions. These types of facilities have not experienced lengthy or time-consuming permit approval processes. The streamlined aspects of PrintSTEP, therefore, were not seen as a benefit by such facilities. A streamlined program like PrintSTEP could expect to see greater efficiency improvements in industry sectors in which more multimedia regulatory reporting and approvals are required.

Impact on Efficiency of the PrintSTEP Process for State Governments

Interviews were conducted with key staff at each state's environmental agency both at the baseline and after pilot implementation. Interviews focused on assessing the pre-PrintSTEP organization of the state agency and the procedures and level of effort required from the state's perspective to administer a sector-based, multimedia program as compared with a standard media-based approach.

Improvements inherent in the PrintSTEP objective of regulatory simplification, which is one of the pillars of PrintSTEP did have positive impacts on states.

- **Regulatory Simplification**. If regulations are simplified for the regulated community, it will also be simpler for state personnel to administer. In addition, EPA provided a state guide on PrintSTEP to each participating state which they tailored to reflect state/local requirements, as applicable, as well.

Efficiency in Missouri Pilot

In Missouri, interviews were conducted with staff from the Air and Land Protection Division, Hazardous Waste Program, Water Pollution Control Program, and Air Pollution Control Program.

Organization of Missouri DNR

In Missouri DNR, media programs are compartmentalized with some single-media units working together on cross-media activities. Those mentioned during the staff interviews included the following:

- **Multimedia inspections** coordinated by inspectors in the St. Louis regional office who are cross-trained. In these instances, Missouri DNR personnel stated that facilities seem to appreciate the cross-media coordination, as it appears to be less time consuming for them.
- **Technical assistance programs (TAPs)** in the state designed to address multimedia concerns, including multimedia environmental compliance inspections and an institutional enforcement coordinating committee that crafts multimedia enforcement solutions.
- **"Concurrence of Action" forms** that allow different permit programs to inform and obtain permission from each other for multimedia actions.

For general questions and very basic permitting questions (e.g., questions about whether a permit was required), printers can call the TAP. Small businesses typically call for general information. For more specific questions they are referred directly to the individual programs' staff. Because the Air and Land Protection Division covers permitting for all programs, this division is the de facto contact for multimedia questions, including permitting. The group serves as a permit Coordinator to help companies figure out which media permits they may need and refers them to the appropriate permitting staff and to the TAP. This function is

publicized by other Missouri DNR program staff members, who call the division if they learn of a facility that may have multiple permitting issues. Before the implementation of PrintSTEP no specific point of contact existed for printers. Under the pilot program, the PrintSTEP Coordinator served as that single point of contact, but only for the St. Louis region as that is the designated pilot area. Other agencies were involved with PrintSTEP, including the Metro Sewerage District, the St. Louis City Air Pollution Control Division, the St. Louis County Health Department, the EPA Region 7, the Air Conservation Commission, and local counties and cities.

Comparison of the Traditional Missouri DNR Structure with the PrintSTEP Program
The existing regulatory system at the Missouri DNR was described by media office staff in the following manner:

Air. Missouri air permits include the following:

- General Permit. This permit is used for industry sectors as a group, but no general permit exists for printers.
- Basic Permit. This permit is for facilities for which potential emissions are below a major source threshold.
- Intermediate Permit. This permit is for facilities for which potential emissions are greater than a major source threshold, but facilities elect to take restrictions to keep emissions below that threshold. This permit is similar to a Federally Enforceable State Operating Permit (FESOP).
- Title V Permit or an Intermediate Permit (can apply for either type of permit). Facilities with a Title V Permit can increase emissions up to the regulatory limit rather than having an artificial cap. It is harder to expand operations with an Intermediate Permit; there may be as much as a 180-day delay. With Title V, however, compliance assurance monitoring measures have to be put in to provide a higher degree of certainty. In contrast, the Intermediate Permit requires additional record keeping to prove that the facility's emissions are below the major source threshold.

Waste Water. In Missouri, one state agency staff member is responsible for industrial pretreatment permits for the state. Printers in the pilot area discharge to POTWs; no direct dischargers exist. Most printers in Missouri would not be expected to have a permit from a POTW. Statewide, only seven or eight printers are SIUs and would therefore be permitted by a POTW and undergo inspections. Non-SIUs would not have a permit. No categorical pretreatment standards are in place for printers; thus the POTW sets the standards. POTW rules differ by county.

Storm Water. At least two printers in the pilot area held general permits for storm water prior to the start of the PrintSTEP pilot. The state-level industrial pretreatment person interviewed did not know whether additional printers in the pilot area held storm water permits.

Hazardous Waste. Hazardous waste permits in Missouri are only issued for treatment/storage/disposal (TSD) facilities. Facilities that generate hazardous waste register, obtain an ID number, and pay fees. The Missouri hazardous waste categories are slightly more stringent than the federal categories.

Consolidation. Across all media programs, limited reporting consolidations were available to PrintSTEP printers during the pilot. Printers still have their monthly sewer bills, state storm water fee, and air and waste fee. However, on-site compliance assistance assessments (conducted by the PrintSTEP Coordinator) were consolidated across media and such assessments proved to be very helpful in identifying areas for environmental improvements.

Costs for Missouri DNR. Missouri estimated the time it takes to process a standard construction permit for printers the size of those included in PrintSTEP. This estimate is compared with the time it took to implement the PrintSTEP pilot per printer in St. Louis, MO. Table 24 displays the estimates.

Table 24: Total Estimated State Staff Time to Implement the PrintSTEP Pilot per Printer in St. Louis, MO
Total **estimated** time for implementing PrintSTEP per printer in St. Louis, MO. Notifications: 69 hours/printer Agreements: 132 hours/printer
Total **estimated** time for processing standard permits in Missouri Water (typically not applicable to printers): 12 hours/printer Air (occasionally applicable to printers): 20 hours/printer
Source: Interviews with PrintSTEP Coordinator.

Table 24 reflects the approximate time it took for the state PrintSTEP coordinator to complete the following types of activities:

- Soliciting printers, conducting workshops and hearings, reviewing Applications and setting up the Repository;
- A visit to each interested facility at least twice, with the second visit to work with the printer to complete the printer's Application and provide other on-site environmental assistance;
- Developing, drafting and finalizing Notifications and Agreements; and
- Completing MOUs with city air, county air, and sewer departments.

Table 24 also reflects the time it takes to process standard construction permits in MO for printers the size of those included in PrintSTEP; the activities encompassed within that time estimate include the following:

- Responding to questions regarding obtaining a construction permit;
- Logging the application and checking for completeness by the initial review unit (when the 90 day clock starts);

- Submitting the application into the queue for technical review;
- Reviewing the application for potential and expected emissions levels and, if emissions levels indicate, modeling ambient pollutant concentrations beyond the fenceline; the review includes additional questions and clarifications as needed by the staff;
- Drafting the permit and setting any operating or performance conditions as necessary;
- Providing the draft permit to the applicant for review; and
- Issuing the permit.

It should be noted that MO charges the printer a fee per hour it takes to process the permit application; as a result, there is a built-in incentive for the printer to provide all the required information up-front thereby reducing the time it takes to process the standard construction permit.

As shown above, the activities reflected in the PrintSTEP estimate are much broader than the activities encompassed in processing a permit under the traditional system.

The PrintSTEP Coordinator assessed that the time required of the state would decrease dramatically were a printer joining PrintSTEP today. Because the PrintSTEP Coordinator was working on a process that was under development, every time a different issue arose the Coordinator had to consult with the SAG to determine how to proceed. This learning curve would not apply in the future. However, some efficiencies were seen, including the ability to focus only on those issues relevant to a particular printer's specific processes. Being familiar with printing processes as the Coordinator was, the Coordinator did not need to ask about every piece of equipment; a permit writer unfamiliar with the sector might have to do this.

Efficiency in the New Hampshire Pilot

For the evaluation, interviews were conducted with staff from the New Hampshire SBTAP and pollution prevention, water pollution, enforcement, outreach, air, and waste management programs, all of which are located in the New Hampshire DES (NHDES) offices in Concord, New Hampshire.

Organization of NHDES

Each media program within NHDES operates separately. However, some cross-media activities do occur. Those mentioned during the staff interviews included the following:

- **Cross-media initiatives** with individual sectors in specific areas, primarily driven by SBTAP. For example, work was undertaken with the automotive sector in compliance, pollution prevention, and best management practices. Other multimedia efforts have involved dry cleaners, hospitals (for mercury), and spray-booth operations.
- **Cross-media inspections** occurring approximately six times per year. For these inspections, the separate media programs collaborate on targeting and performing the inspection. The time needed for multimedia inspections has been reduced and is now almost the same as that required for separate inspections. The time required of the facility is roughly the same.
- **Compliance assistance efforts** of the pollution prevention group often have a cross-media focus. The outreach/communication Coordinator's activities are often multimedia.

Given the fact that the DES is organized by media, no single point of contact for printers existed before the creation of the PrintSTEP Coordinator role. In the past, for this type of assistance small printers contacted the municipality and larger permitted printers contacted the person listed on their permit. Others would contact the DES main number or the public information center. Referrals to the pollution prevention group are also sometimes provided during inspections or in letters of deficiency, as the pollution prevention group has a multimedia focus.

Comparison of the Traditional NHDES Structure with the PrintSTEP Program

The existing regulatory system at the New Hampshire DES was described by DES staff in the following manner:

Air. In the traditional regulatory system, every facility must determine whether its potential emissions are less than the state thresholds for criteria pollutants and air toxics (known as regulated toxic air pollutants or RTAPs). Where the facility exceeds a threshold, a permit is required. If a facility's potential emissions for criteria pollutants are greater than the state threshold but lower than the federal threshold, an operating permit (Federally Enforceable State Operating Permit) is required. The FESOP must be renewed every five years. The state usually processes applications in less than 90 days. The backlog of permits to be processed is significant because the renewal process for facilities that have had operating permits includes updating emission information, additional modeling, etc. If a facility's potential emissions of criteria pollutants or an air toxic are greater than the applicable

federal threshold, a Title V permit is required. Only a few printers in the state have a Title V permit. If a facility makes modifications that increase its potential emissions, it may need to apply for a FESOP or a Title V permit. Both the FESOP and the Title V permits require public notice. When a facility with a FESOP plans modifications that increase emissions, the modification goes through the same process as a new application, including public notice and an opportunity for public meeting, if requested.

An RTAP evaluation which includes calculating daily and annual emissions of RTAP chemicals used at the facility is required for all businesses using any RTAP chemical. However, facilities are not required to submit the data to the state unless the levels are greater than the threshold levels for a permit. Most printers do use one or more RTAPs below threshold level; however, prior to PrintSTEP, they had not completed their required RTAP evaluation. Once they joined PrintSTEP, all printers were to complete their RTAP demonstrations and submit the calculations with their Applications. Note that the RTAP demonstration requirement was not new or specific to PrintSTEP, although some printers viewed it as such because they had not completed the calculations previously. As a result, some printers considered this process to be a burdensome aspect of PrintSTEP, when actually it was an existing state requirement prior to PrintSTEP.

Waste Water. Most printers discharge to POTWs. Municipalities with POTWs may set discharge limits for individual facilities, and facilities discharging to the POTW are required to pay a fee. The process is controlled locally; consequently, the requirements (such as pollutant limits and the process for making changes in place) will vary among municipalities. Printers in areas without a POTW typically ship their waste water off-site for treatment, in which case management of their waste water falls under the hazardous waste regulatory system. No printers in the state are known to be direct dischargers.

Storm Water. New Hampshire has not taken full delegation of the EPA's NPDES storm water program. Therefore, the state handles outreach and assistance, but EPA Region 1 handles permits. No printers are known to have a NPDES storm water permit in the state. Thus, the regulatory system for both PrintSTEP and non-PrintSTEP printers is the same.

Hazardous Waste. Every facility generating hazardous waste must obtain an EPA identification number. Based on the quantity of hazardous waste generated, a facility will fall into one of several generator status categories. Generator status determines reporting, storage, and other requirements. Most printers are hazardous waste generators and should have an RCRA ID number. If a facility increases its hazardous waste generation to the point that its generator status changes, it must notify the state.

Consolidation. Some consolidation of reporting requirements was possible in New Hampshire. With respect to waste water, only the three Agreement printers had waste water sampling requirements, and New Hampshire was successful in combining the waste water report with the annual PrintSTEP report. This consolidation reduced one printer's reporting

requirement from quarterly to annually. The other two printers had annual reporting requirements so no real reduction in quantity of reports occurred; however, the printer could combine all required reporting in one report and submit it to DES and the local POTW. For hazardous waste, all facilities generating hazardous waste are required to submit quarterly activity reports. When the state receives hazardous waste manifests, it develops a report of all activity for that facility. The state then sends the report to the facility on a quarterly basis to verify the information, and the facility submits its fee. The state employs the same process for the biennial reporting required under RCRA for LQGs. The PrintSTEP program was not able to consolidate quarterly hazardous waste reporting requirements because these reports are required by state statute. The state's new SQG Self-Certification[9] program and the Hazardous Waste Coordinator Certification program for full quantity generators (FQG)[10] are not included in the PrintSTEP program, as these programs were introduced after PrintSTEP was implemented.

Cost for NHDES. New Hampshire estimated the time it takes to process a standard air permit for printing facilities; only air permits would apply to New Hampshire printers. This time is compared with the estimate for implementing the PrintSTEP pilot per printer in NH and shown in Table 25.

Table 25: Total Estimated State Staff Time to Implement the PrintSTEP Pilot per Printer in NH
Total **estimated** time for implementing PrintSTEP per printer in New Hampshire Notifications: 72 hours/printer Agreements: 126 hours/printer
Total **estimated** time for processing standard permits in New Hampshire Air (occasionally applicable to printers): 59 hours/printer
Source: Interviews with PrintSTEP Coordinators.

The type of support provided by the PrintSTEP Coordinator during the PrintSTEP Application process and reflected in the table above includes the following:

- Contacting printers;
- Reviewing Applications for completeness;
- Contacting printers for missing support materials;
- Assisting printers with their RTAP evaluations;
- Conducting site visits to assist printers in completing their Applications;
- Developing, drafting and finalizing Notifications and Agreements;

[9] Under the Small Quantity Generator Self-Certification Program, each SQG reviews its hazardous waste management procedures, conducts a self-inspection of its facility, and certifies compliance to DES every three years.

[10] A FQG generates, in any one month, more than 220 pounds of hazardous waste (about ½ drum), 2.2 pounds of acutely hazardous wastes, or 220 pounds of contaminated soil or absorbent. Under the Hazardous Waste Coordinator (HWC) Certification program, any FQG must have on staff a certified HWC trained to ensure compliance with hazardous waste rules.

- Publishing required public notice(s); and
- Setting up the Repository.

The RTAP demonstration was much harder and time consuming for printers to complete than was originally anticipated. The PrintSTEP team provided extensive support and it is believed that this support had a strong influence on the large number of printers choosing to participate in the pilot.

Processing standard air permits in NH includes reviewing the application forms for completeness, reviewing emission calculations for accuracy, reviewing applicable rules for insertion into the permit, preparing the permit, discussing the permit with the source, and posting the permit for public notice.

The information displayed in Table 25 (above) shows that PrintSTEP required more time than the traditional system. However, the activities reflected in the PrintSTEP estimates are broader and include multimedia issues and requirements whereas the activities cited for approval of a traditional permit are specific to air permits only. Because of the support needed to get the pilot going and bring printers up-to-speed, it is difficult to make a true comparison with traditional permitting. The PrintSTEP Coordinator attributed the time consumed with PrintSTEP to three primary factors:

- **Learning curve.** Both the state and the printers experienced a steep learning curve in processing the Applications and the ensuing Agreements and Notifications. On the Agreements, a considerable amount of time was spent on waste water treatment to include the rules that vary locally from site to site, as well as inclusion of all requirements for an air permit. Once a template was established for these rules, the Agreements became much easier (e.g. time spent was reduced by more than half compared to the beginning of the pilot).
- **Changes in personnel.** The state PrintSTEP Coordinator changed several times over the course of the pilot.
- **RTAP review**. The printers were expected to perform the RTAP evaluations by themselves because these evaluations were part of their existing state requirements, but in reality, most printers needed assistance due to the complex nature of the state regulation.

Taking these factors into consideration, it is clear that the time requirement for a PrintSTEP printer joining today would be much shorter. For example, developing the fourth Agreement (not included in this evaluation) took less than half the time of each of the previous three.

Summary Assessment of the Efficiency of PrintSTEP for State Governments

While streamlining and improving the effectiveness of state government operations were not among the primary goals of PrintSTEP, such steps are embodied in the regulatory simplification and public involvement pillars of the program. In fact, if less administrative burden is placed on a printing facility, the state agency administering the program benefits

directly. Because PrintSTEP was a pilot and had a steep learning curve, as well as required significant preparation, administrative advantages were not immediately felt. However, participants widely reported that once the program was established, they believed these factors would improve.

Another administrative aspect is the positive impact on staffing by a program such as PrintSTEP. The state point of contact is able to work efficiently to resolve problems that are sector-specific. Working this way will have economies that affect the industry sector directly, and the quality of technical and compliance assistance will improve. In general, state participants in PrintSTEP felt that being a part of PrintSTEP was a positive experience.

Impact on Public Involvement

Design of Public Involvement Component

One of the pillars of PrintSTEP is providing an enhanced opportunity for public input on printers' environmental requirements. A Community Handbook was developed by the national PrintSTEP team, and was customized by each pilot area. This handbook described the PrintSTEP process for public involvement and also provided background on the printing industry. The concept of enhanced public involvement was incorporated into the PrintSTEP pilot by establishing processes to ensure the following:

- The community and interested parties are notified when a printer applies for a PrintSTEP environmental approval.
- The public can review any PrintSTEP Application and provide input before the state finalizes decisions.
- Printers talk with interested people early in the PrintSTEP process to promote cooperation.

Notifying the Public. All PrintSTEP Applications were placed in a public information repository. Information repositories were located throughout each pilot area. Many were at public libraries, and both pilots created websites where Applications were posted. In Missouri, information repositories were established in six St. Louis County libraries and two local Missouri DNR offices near the volunteer printers. In New Hampshire, information repositories were established at the NHDES office and in the town offices of towns of participating printers with PrintSTEP Agreements. Applications were also available via the PrintSTEP website.

A registry was also established where interested parties could register to be notified of any new Applications or other PrintSTEP activities. As described in the following section *Community Outreach Activities*, each PrintSTEP Coordinator and individual printers made considerable effort to inform the public about the PrintSTEP process and the opportunity for the public to get involved. No one registered with the PrintSTEP Registry in either pilot area.

In addition to filing the Application in the information repository, the program also notified the public of all PrintSTEP Agreements through one of several venues including newspaper announcements, signs at the facility, and letters to public officials. Some printers with "Notifications" also took these additional steps to notify the public even though it was not required of them.

Commenting on Applications. The PrintSTEP design also included a process to address community comments. A component of this process was the opportunity for public meetings to be held, if requested, so that the printer, regulators, and the public could discuss concerns. If a case arose in which significant issues were not resolved at the public meeting, the process included a step whereby the state would work with the community and the printer to prepare a Community Involvement Plan (CIP). This plan would outline how the state agency, the printer, and the community would address the issues discussed at the public meeting. The CIP would describe what actions must be taken for the PrintSTEP process to move forward. The CIP might also describe actions to be taken after the Agreement is finalized. A CIP template was developed by the national PrintSTEP workgroup to facilitate the process.

No comments were received on any PrintSTEP Application, therefore no public meetings were held and no CIPs were developed.

Facilitating Partnerships. Many federal and state laws have public involvement components. Public involvement requirements exist because lawmakers recognize that it is important to hear from communities on local issues. The PrintSTEP design went one step further by encouraging communities and printers to actually build a partnership to work through environmental issues together. These partnerships were intended to go beyond PrintSTEP's formal public involvement (described above), so that the public could have ongoing involvement in the PrintSTEP process.

The PrintSTEP Coordinators and several printers in each pilot area initiated numerous outreach efforts to inform the public about the pilot and invite public participation; however, no community members responded.

Community Outreach Activities

To inform the community about PrintSTEP and opportunities for involvement, stakeholders in each pilot area conducted extensive outreach activities. These activities are summarized below.

When the state agency set up its PrintSTEP pilot program, one of the first steps was to establish a stakeholder advisory group (SAG). The purpose of the SAG was to help the state make decisions on many of the details of how PrintSTEP should be implemented. The advisory group included representatives from the community, industry, and government and was assembled to ensure that the pilot implementation would better represent and meet the

needs of all stakeholders. The specific outreach activities of these groups in each state are discussed in detail in "Implementation of the PrintSTEP Pilots."

To summarize, each pilot area conducted numerous activities to raise public awareness about the PrintSTEP pilot and the opportunity for public involvement. The PrintSTEP Coordinator conducted or organized these activities including the following:

- Development of a community handbook.
- Distribution of press releases.
- Publication of articles in newsletters.
- Creation of PrintSTEP website.
- Contact with local officials.
- Establishment of information repositories.
- Organization of workshops for printers.
- Publication of brochures.
- Placement of radio announcements.

In addition to these activities, individual printers conducted their own community outreach activities. All printers in Missouri and five printers in New Hampshire conducted some individual outreach activity (in addition to the PrintSTEP Coordinator's outreach) to let the public know about PrintSTEP. Most posted a sign at their facility, several placed an announcement in the newspaper and/or sent letters to public officials, and one printer held an open house (which no one attended).

Level of Public Involvement in the PrintSTEP Pilot

As mentioned earlier, public response to PrintSTEP was limited. Public involvement can be summarized in the following manner:

- No parties registered with the PrintSTEP Registry in either pilot area.
- No comments were submitted on any PrintSTEP Application, therefore public meetings did not need to be held, and Community Involvement Plans (CIPs) did not need to be developed.
- No community members expressed interest in PrintSTEP after numerous outreach efforts to inform the public about the pilot and invite public participation.
- Active public involvement was limited to those community representatives who volunteered to join a Stakeholder Advisory Group.

Evaluation of the Stakeholder Advisory Group (SAG) Process

To evaluate the effectiveness of the public involvement component of PrintSTEP, a survey of participating community members was originally planned as part of the PrintSTEP evaluation. However, no individual community members commented on any PrintSTEP Applications or placed their names in the PrintSTEP Registries. The PrintSTEP Coordinators solicited comments from their SAGs on the community involvement aspect of PrintSTEP. This approach was used to gather as much information as possible on why the public's interest was so limited.

The assessment of the SAG concept is based on input from those SAG members who responded to the stakeholder survey, and from the PrintSTEP Coordinators. The SAG was a key element of the public involvement component of PrintSTEP. Note that responses from the community representatives on the SAGs were also rather limited, despite numerous efforts to solicit their input. Two people responded to the community survey in Missouri, both of whom worked for community organizations in the area. Seven people responded to the stakeholder survey in New Hampshire; all seven worked either for the state environmental agency or for EPA Region 1. Their responses are summarized below.

The diverse nature of the SAG is what made it work well. All respondents said they were satisfied or very satisfied with how the PrintSTEP SAG worked. In both states, the aspect of the stakeholder advisory process that was found effective was the cross-sectional composition of the stakeholder group. A Missouri respondent said that having "representatives from the printing industry, the regulatory agencies, and the community was an excellent idea." Another respondent felt that the group's "broad representation kept the process even and did not allow for any single opinion to dominate."

Maintaining this diverse representation can be challenging. In New Hampshire, broad stakeholder involvement was achieved early in the development of the program, but less so after that. The members representing the public tended to decrease their participation. Also in New Hampshire, more regulatory people (than community representatives overall) were involved in the stakeholder group. One respondent commented that stakeholder input is critical to developing programs and should be continued, but it is keeping stakeholders' attention that is challenging. This challenge may have been compounded in New Hampshire due to turnover in the PrintSTEP Coordinator position during the early stages of the pilot.

Maintaining communication is needed, while minimizing the burden on members' schedules. Missouri maintained the diverse representation of the SAG largely by having frequent meetings. The PrintSTEP Coordinator in New Hampshire thought more frequent meetings or communications among stakeholder advisory group members were needed, and the sporadic nature of the communications could have contributed to the lack of on-going participants from the New Hampshire stakeholder group. This thought was echoed by a SAG member who said that members should have been kept more up-to-date. Conversely, in Missouri, one criticism was that there were too many meetings to attend. To improve the efficiency of the Missouri SAG meetings, a facilitator was brought in, which SAG members agreed improved the progress of the group discussions and shortened meetings.

Evaluation of the Printers' Involvement with the Public

In addition to the feedback from SAG members, participating printers also provided input on the public involvement component of PrintSTEP through phone interviews. Their views are presented below, along with additional information from SAG members.

The public involvement component of PrintSTEP was not viewed as providing any direct benefit for participating printers. The usefulness to printers of PrintSTEP's public involvement component was assessed based on telephone survey responses. Findings show that printers generally did not find the public involvement component of PrintSTEP to be beneficial. Specifically:

- None of the printers said they learned about community concerns through the PrintSTEP public involvement process. For example, one printer held an open house and no one attended. This printer had also posted a sign outside the facility and put an announcement in the newspaper. This printer thought his facility's involvement efforts did not provide any direct benefit.
- Four-fifths of the printers responding (83%, or 34 of 41) said that the public involvement component of PrintSTEP was not beneficial. For example, respondents said that they "didn't see any benefit" to conducting outreach activities. When asked *why* they thought the public showed such limited interest, most printers said their impacts were too small to warrant such attention. For example, one printer stated, "I don't think [the public has] much of an interest. They don't see print shops as a threat to them or the environment."
- The remaining printers (17%, 7 of 41) found the public involvement to be "somewhat useful." These printers did not receive any feedback from the community, but thought it was a good opportunity to "let the community know [that printers] are aware of environmental issues." One printer said he does "tell some customers about PrintSTEP and that people are receptive, but the general public is apathetic unless the subject directly involves them."

Other stakeholders thought public interest was so limited because of the relatively low environmental impacts of the printing industry. Stakeholders interviewed said the printing industry in general is not perceived to be a business posing adverse effects on the environment. If a member of the community were to focus attention on environmental protection that attention would most likely be focused on a bigger industry or a neighborhood business directly affecting the community member's environment. Several respondents stressed that they didn't think it was a negative outcome that community interest was so limited. The printing industry is perceived to present a low risk to the environment. Historically, the public rarely speaks up unless the facility presents unresolved problems (e.g., odor or noise complaints). In this case, it seemed to some stakeholders that members of the public didn't perceive that they needed to weigh in on the issues presented. In some cases lack of an organized, active, and involved community (or neighborhood) organization also may have contributed to the lack of community involvement.

Few stakeholders thought changes to the PrintSTEP design would result in greater community interest. The stakeholders that did offer suggestions for improving community outreach suggested: more open houses at printers' facilities; additional local press releases; more meetings with local community leaders; and participation in community events (e.g., school graduations, town parades, sporting events). Other stakeholders did not think additional efforts or changes to the pilot design would result in any public participation. On this note, these stakeholders suggested that no further attention be focused on public interest or involvement.

Summary Assessment of PrintSTEP Public Involvement

Public involvement was one of the pillars in the design of the PrintSTEP program. In addition, public involvement was one of the key elements that made the project different from anything EPA and the stakeholders, as a group, had tried before. In the design stage, extensive planning went into incorporating and encouraging public involvement in PrintSTEP. During implementation, considerable time and effort were spent to elicit public participation. A variety of outreach activities to inform the public did not result in input from the community. However, it is not possible to know how the public responded to the outreach information. Several scenarios are possible:

- Did members of the public read press releases (or newspaper announcements, signs, or newsletter articles) and, based on what they read, feel reassured that printers were generally an environmentally responsible industry? If so, PrintSTEP's public involvement efforts were an effective and worthwhile outreach tool.
- Did members of the public ignore the PrintSTEP announcements, thinking that the environmental impacts of printing are not enough of a concern for their valuable free time? If so, the time, energy, and expense spent on informing an indifferent audience was not the best use of resources.
- Were outreach efforts insufficient to reach those members of the community who would have been interested in participating? If so, more costly or extensive efforts (e.g., TV or radio announcements) would be warranted only if evidence indicates that the public would be interested.

Without knowing which of these scenarios occurred, it is assumed that some aspects of all scenarios may have played into the final lack of public interest. Results from stakeholder interviews suggest that the second scenario is most likely (i.e. the environmental impacts of the participating printers were not of public concern). In future projects, a method should be devised to assess the level of public interest prior to designing a public involvement program and conducting extensive outreach activities. This assessment could be initiated through the one component of the public involvement design that was a clear success: the SAG, which included representatives of the community. The SAG's input into the implementation of the program was essential. However, most of the public involvement aspects of PrintSTEP were largely finalized prior to the SAG's involvement. This development work was done at the national level, and included extensive and passionate input from national advocates for public involvement. Similar to the other program components, the Community Handbook

developed by the National PrintSTEP team was intended as a guide, where each SAG would use their knowledge and expertise to determine an appropriate level of effort and identify the most appropriate and cost-effective form of public outreach for their community. It is not certain that a local SAG could have foreseen the lack of public response to PrintSTEP, but this group is the best resource to develop an effective public outreach plan for a given geographic location.

Benefits and Drawbacks of Participating in PrintSTEP

Benefits

During the telephone survey at the end of the PrintSTEP pilot, printers were asked about benefits they saw from their involvement in PrintSTEP. The majority of printers responding (57%, or 20 of 35) said they gained a better understanding of their company's environmental impacts. Printers expressed a variety of motivations for joining PrintSTEP; however, the most frequent response was that they joined to improve their environmental compliance and better understand their requirements. PrintSTEP met this need, as most printers consider one of the primary benefits of their participation to be this understanding. The majority of PrintSTEP participants were out of compliance prior to their involvement with the pilot; PrintSTEP brought these printers into compliance. Printers made the following comments:

- "Everyone in the shop is aware of the environmental impact of what they are doing. It differentiates us from other printers."
- We have "a greater awareness of hazardous materials. We found ways to reduce consumption of materials … saving money."
- "We were able to get into compliance without worrying about punitive action from the government."
- "I don't have to wonder if we're doing the right thing [regarding environmental requirements]; I'm sure we are."

The second most frequently stated benefit was having a single point of contact for environmental questions. Printers felt having access to the PrintSTEP Coordinator improved communications and their relationship with the environmental officials:

- "Just having a real person who provides guidance and assistance as opposed to punitive threats" is the greatest benefit.
- "I feel comfortable calling the state now and know who to call."

Table 26 summarizes printers' responses to the benefits they realized from involvement in PrintSTEP.

Table 26: Benefits Printers Saw from Their Involvement in PrintSTEP

Benefit	Percentage Responding
Better understanding of the requirements/environmental impacts of their materials	57% (20/35)
Single cross-media contact for printing	29% (10/35)
Other: consolidation of requirements; community responsibility/public image	9% (3/35)
No benefits seen[11]	6% (2/35)
Source: PrintSTEP pilot endpoint telephone survey of participating printers.	

[11] One printer said they were involved with "pre-press only." The other did not provide an explanation.

The state PrintSTEP Coordinators were also asked about the benefits of PrintSTEP, based on their experience. Both Coordinators found the program to be a valuable approach to improving the environmental performance of small businesses. The Missouri Coordinator stressed the value of multimedia assessments in identifying opportunities for reduced environmental impacts. He also stated that he found plant-wide air limits to work very well and thought the PrintSTEP Air Levels should serve as a model for other programs.

The New Hampshire Coordinator stressed the benefit of bringing printers into compliance, and helping them to maintain compliance through the simplified process offered through PrintSTEP. She also noted other benefits including promoting environmental awareness, helping printers learn to review their materials and implement pollution prevention, and providing operational flexibility.

Drawbacks

During the telephone survey at the end of the pilot, printers were asked to describe what they saw as the drawbacks from their involvement in PrintSTEP. Of the 16 printers responding to this question, 62% (10 of 16) said they did not see any drawbacks. The remaining six respondents gave a variety of responses, as summarized in Table 27. The following specific comments were made:

- "Initially, it was extremely time-consuming. I had to do things that my competitors did not. In the long term, though, I think it was worth it."
- "It was an extra burden that I don't think we should even be involved in. I had to hire someone for RTAP calculations." (Note: RTAP was a NH state requirement regardless of PrintSTEP.)

Table 27: Drawbacks Printers Saw from Their Involvement in PrintSTEP

Drawback	Percentage Responding
None	63% (10/16)
Initially it required a lot of time (but not after the first year)	13% (2/16)
Time-consuming compared to the traditional system	13% (2/16)
Requires a definite commitment by the owner	6% (1/16)
Higher costs for PrintSTEP printers; everyone should do this	6% (1/16)

Source: PrintSTEP pilot endpoint telephone survey of participating printers.

The state PrintSTEP Coordinators were also asked about the drawbacks of PrintSTEP. The Missouri Coordinator found the lack of community participation to be the pilot's greatest drawback. In thinking ahead to how PrintSTEP concepts could be implemented in other areas of the state, or in other sectors, he thought there could be difficulty in applying the model. Much of the success of PrintSTEP, he said, is based on having a single point-of-contact who is knowledgeable about the sector and the sector's requirements. To duplicate the approach, he stated, would require training the proper staff to provide sector-specific, multimedia assistance.

The NH Coordinator found the voluntary design of the pilot to be a drawback in that it did not ensure a level playing field for all NH printers. She felt that printers in the program who are now in compliance put a lot of effort into coming into compliance, as compared to the effort put in by non-participating printers which remains unknown. If PrintSTEP became mandatory, it is anticipated that it would level the playing field and bring more printers into compliance. Additionally, she noted that being a new program, the process was very time-consuming at first for both the state agency staff and the printers. The printers had to work through the RTAP information for the first time, even though it was an existing program required by NH regardless of PrintSTEP. Some of the printers thought they were in compliance going into it the program, only to find out they were not and that work was needed to come into compliance.

Overall Satisfaction with PrintSTEP

During the telephone survey at the end of the pilot, printers were also asked how satisfied they were with PrintSTEP. Their responses are summarized in Table 28.

Table 28: Participating Printers' Satisfaction with PrintSTEP

Level of Satisfaction	Percentage Responding	
	Missouri	New Hampshire
Very Satisfied	100% (7/7)	79% (23/29)
Somewhat Satisfied	0%	21% (6/29)
Somewhat Unsatisfied	0%	0%
Unsatisfied	0%	0%

Source: Endpoint telephone survey of printers.

The PrintSTEP Coordinators were also both very satisfied with the pilot. The New Hampshire Coordinator stated that PrintSTEP had resulted in greatly increased compliance and awareness of environmental impacts for the printers involved in the program. In the long run, she commented, there will be cost savings to businesses and the state agency.

Summary of Findings

The evaluation findings are portrayed under two headings: a) The achievement of PrintSTEP goals; and b) Printers' perspectives on benefits, drawbacks and satisfaction with PrintSTEP.

Achievement of PrintSTEP Goals

The national PrintSTEP team established the goals of PrintSTEP which directed the design of the pilot program. The goals were met for the program to a greater or lesser extent and in various ways as described below.

Goal 1: Enhance Environmental Protection

With regard to enhancing environmental protection and practices, improvements were observed in some areas while in others little or no change was seen. While air emissions and hazardous waste generation increased when summed across participating facilities, the results did show that a greater number of PrintSTEP facilities decreased air emissions and hazardous waste releases as compared with non-PrintSTEP facilities during the pilot, when corrected for activity level. Across both states, 51% of PrintSTEP printers reduced air emissions during the pilot as compared with 38% in the non-PrintSTEP group. Across both states, 66% of PrintSTEP printers decreased waste during the pilot compared to 48% of non-PrintSTEP printers. With regard to waste water, there was no net change in the discharge status of PrintSTEP printers. Similarly, there was no net change in the number of PrintSTEP printers requiring a storm water permit.

In addition, other indirect measures of environmental performance were observed. The pilot led to improved compliance for 86% of the participating printers and promoted pollution prevention and overall environmental awareness. These factors greatly enhance environmental protection.

Goal 2: Increase Use of Pollution Prevention Practices

Pollution prevention activity increased by an average of 5% for PrintSTEP printers. This increased activity can be attributed to the direct, on-site technical assistance provided by the PrintSTEP Coordinators, resulting in greater awareness of potential pollution prevention actions. It was also observed that printers that discontinued a pollution prevention practice often had an accompanying elimination of the associated process or equipment at their facility (e.g., silver recovery was no longer used because the printer switched to digital pre-press applications and no longer had silver discharges). Lastly, many PrintSTEP printers were already practicing pollution prevention when they joined the pilot as would be expected from facilities interested in a voluntary program focused on environmental protection.

Goal 3: Improve Efficiency of the Regulatory Process for Printers

One of the goals of the designers of PrintSTEP was to offer a streamlined method for printers to address their environmental requirements. This concept of improved "efficiency" encompasses many facets, including:

- A streamlined methodology for printers to learn about and understand their environmental requirements across all media.
- Flexibiity in the regulatory process to allow printers to respond to business opportunities more quickly.
- A process in which recordkeeping and reporting requirements are less time-consuming for printers.

In some of these areas, PrintSTEP offered significant improvements, while in others the pilot had little effect. A summary of each aspect of efficiency follows.

Printers clearly gained an increased understanding of their environmental requirements. This understanding was their primary motivation for joining the pilot and their improved compliance and responses to the survey questions demonstrate that their understanding did improve.

The PrintSTEP pilot demonstrated that the program can allow printers to respond to business opportunities more quickly. The concept of allowing for operational flexibility and how it was implemented in PrintSTEP appears sound. However, since few printers experienced operational changes during the course of the pilot program, when all participants were surveyed, the majority of printers saw no change in turnaround time to process their environmental permits or requirements.

Participants noted the significant value in having a designated PrintSTEP Coordinator in each pilot area. Almost all participants contacted their Coordinator at some point during the pilot and the vast majority were very satisfied with their interactions.

With regard to time requirements, some Missouri printers did see reductions, with 67% spending less time on reporting under PrintSTEP; however, most saw no improvements in time spent on recordkeeping. In New Hampshire, approximately one-half of the printers saw no change in the time spent on recordkeeping and reporting, while a fair number said their time spent was greater under PrintSTEP, and a few said their time decreased. This finding may be the result of four factors: a) many printers were not meeting their environmental recordkeeping and reporting requirements prior to PrintSTEP and as a result, did not spend any time on these activities prior to the pilot; in fact, almost all of the printers responding to questions indicated that the additional time spent on environmental requirements under the pilot was worthwhile; b) due to constraints within state organizations, there were still some media-specific reports and fees due at various times throughout the year which could not be consolidated; c) a new state requirement (the NH SQG Self-Certification program) was

introduced after the pilot was launched; and d) participants in NH had to submit updated RTAP emission calculations in 2005 for the purposes of this evaluation.

Goal 4: Improve Efficiency of the Regulatory Process for State Governments

Launching and establishing this pilot program proved to be more time-intensive for state environmental agencies than the traditional regulatory system. Because PrintSTEP was a multi-media pilot with a steep learning curve and required significant preparation, administrative advantages were not realized during the timeframe of the pilot. However, PrintSTEP Coordinators commented that after the initial setup (including establishment of MOUs, teaching state required reporting, and other requirements, the process became more streamlined and efficient. The state PrintSTEP Coordinators were able to work efficiently to resolve problems that are sector-specific.

Both state PrintSTEP Coordinators were very satisfied with the pilot. As one put it, PrintSTEP had resulted in greatly increased compliance and awareness of environmental impacts and would result in cost savings to businesses and the state agency in the long run.

Goal 5: Enhance Public Involvement

While the opportunity for public involvement was significantly enhanced through the PrintSTEP pilots, the general public did not show any interest in PrintSTEP. Certainly, the opportunity to obtain information was available to anyone interested in finding it. The findings of the pilot show that the public did not appear interested in getting involved with an environmental program for this industry sector. This lack of public interest was interpreted by several stakeholders as an indication that the public did not perceive problems with the participating printers and therefore did not become involved in the PrintSTEP pilot.

Goal 6: Provide Motivation for Stakeholders to Participate in PrintSTEP

The evaluation findings showed that most printers were motivated to join PrintSTEP in order to improve their environmental compliance and better understand their environmental requirements. PrintSTEP met this need, as printers consider one of the primary benefits of their participation to be this improved understanding. The benefits realized under PrintSTEP outweighed the drawbacks of the pilot program in that printers overall were very satisfied with the program. This would indicate that there is sufficient motivation for printers to participate. Another motivation cited for joining was to save time and effort related to environmental requirements. PrintSTEP did not provide this benefit to the majority of participants. For most participants, time requirements increased or remained the same during PrintSTEP, although possible reasons for this were described under Goal 3, above.

The potential for flexibility in making process modifications and responding quickly to business opportunities was realized in PrintSTEP where those situations arose. This flexibility was a potential motivation for both printers and state environmental agencies to participate in the pilot.

The state environmental agencies were motivated to participate as a test of improved program administration designed to improve overall environmental protection. Upper management in both Missouri and New Hampshire's environmental agencies enthusiastically supported the program. With the potential for increasing the efficiency of the environmental requirements for the printing sector, motivation was provided for the ongoing involvement of this stakeholder group. The pilot was more time-consuming than the traditional system, but PrintSTEP Coordinators saw the potential for increased efficiency once the pilot's implementation phase was completed. The state agencies were very satisfied with the pilot overall, indicating the motivation for state agency involvement exists. Additionally, endeavors in both states are examining application of similar models to other industry sectors.

Finally, the general public stakeholders in PrintSTEP clearly did not have a strong motivation for participating. Industry and government personnel involved in PrintSTEP inferred that the participating facilities did not present the perception of significant environmental harm. As noted, the public is more motivated to participate in such a program if they perceive that significant problems exist which will impact them.

Printers' Perspectives on Benefits, Drawbacks and Satisfaction with PrintSTEP

During the telephone survey at the end of the PrintSTEP pilot, printers were asked about the benefits they saw from their involvement in PrintSTEP. The majority of printers responding (57%) said they had gained a better understanding of their company's environmental requirements and impacts. The second most frequently stated benefit was having a single point of contact for environmental questions. Printers felt that having access to the state PrintSTEP coordinator improved communications and their relationship with the environmental officials.

With regard to drawbacks, 62% of respondents said that they did not see any drawbacks. Those who experienced drawbacks cited the amount of time required as the most significant drawback. However, it should be noted that many printers were not meeting their regulatory obligations prior to PrintSTEP.

With regard to respondents' overall satisfaction with PrintSTEP, 100% of Missouri printers were very satisfied, 79% of New Hampshire printers were very satisfied and 21% were somewhat satisfied.

Recommendations Based on the PrintSTEP Experience

Recommendations Specific to PrintSTEP

The following recommendations are based on the findings in this evaluation report and are presented to those who would consider a PrintSTEP approach.

Fully consolidate printers' requirements for reporting and payment of fees

As noted, restrictions in the state environmental agencies did not allow PrintSTEP to fully consolidate all reporting requirements. For example, the schedule for reporting hazardous waste generation (and for paying the associated fees) differed from the schedule for reporting and the fee schedule for air emissions. PrintSTEP was not able to consolidate the reporting or the fees. Under a supplemental PrintSTEP cooperative agreement, the MO DNR has developed a state consolidated reporting form and is exploring possible applications within the state. Such consolidation would further facilitate a more fully-integrated multimedia program.

Implement the Materials Use Worksheets

The national PrintSTEP team developed process-specific worksheets to help printers estimate their emissions of volatile organic compounds (VOCs) and hazardous air pollutants (HAPs). These worksheets are designed to focus on the higher VOC-releasing materials at printing facilities, so printers can complete their estimates quickly, without wasting time on emissions that are insignificant. These worksheets were not consistently used in the pilot.

Offer online tools for air calculations and reporting

With improving efficiency as a PrintSTEP goal, developing online tools would be an effective next step. An electronic version of the Materials Use tables could streamline the calculations. The ability to complete and submit PrintSTEP Applications online could also improve efficiency. Under a supplemental PrintSTEP grant, the NH DES is developing an electronic version of the RTAP calculation method. Once finalized, the final tool should be made available in an electronic format.

Maintain ongoing communications with PrintSTEP Participants

More frequent communications with printers after they join the program would build on the PrintSTEP foundation established and could promote continuous improvements. Information could be added to the state PrintSTEP websites. The training workshops for printers held at the launch of PrintSTEP could be continued to provide refresher training, perhaps annually, and highlight new regulations and pollution prevention technologies.

General Recommendations for Future Pilot Programs

Members of the national PrintSTEP team proposed general recommendations for future pilot programs. These recommendations go beyond PrintSTEP and can be taken into account in future pilot programs sponsored by the EPA and/or the states.

Recommendation 1: When planning a multiyear pilot, define a process for maintaining regular communication.

Monthly stakeholder conference calls with the National PrintSTEP team throughout the pilot were extremely valuable for sharing information among the pilot states, keeping stakeholders informed, providing the state Coordinators with regular and easy access to expert opinions of the stakeholders, and reporting on milestones. For a pilot of this duration, ongoing communication is critical. Having a standing meeting time each month was very helpful. The meetings were sometimes brief, but the system provided an opportunity to stay in touch. Everyone in the national stakeholder group was invited to these calls during the term of the pilot, regardless of whether or not they participated.

Recommendation 2: Ensure that sufficient incentives exist to attract participants to pilot programs.

Before a pilot program is initiated, it is advisable for the program developers to vet the idea with a subset of the local target audience. It is worthwhile to discuss the incentives for participation in order to obtain feedback prior to implementing the pilot in that area or with that particular population. The PrintSTEP Coordinators felt that the more intimately familiar they were with the industry being targeted, the more tailored and effective the program can be. Further, if a state already has a more-streamlined regulatory structure in place, an industry sector is less likely to participate in a program with similar objectives. This situation arose with the third grantee, Minnesota, where there were insufficient incentives for printers to participate. Conversely, if a "pain point" exists within a state in regard to environmental regulation (e.g., a particularly complex environmental requirement), the state and targeted industry have further incentive to participate in a pilot that provides additional assistance to alleviate that pain point.

Recommendation 3: Develop partnerships with knowledgeable stakeholders to enhance outreach and implementation.

Partnerships for implementation are a key to success. The two active pilots, Missouri and New Hampshire, had national trade associations involved in outreach to the printers when the PrintSTEP pilot was first introduced in each state. In Missouri, an active State Advisory Group worked with the state, local and national trade association representatives to support PrintSTEP and encourage printers to participate. In New Hampshire, the local and national trade association actively participated in workshops throughout the state to educate printers on the program. In the case of the third pilot, the local trade association declined to participate because of workload, which was thought to have an affect on the low level of printers' interest. The credibility provided by industry-savvy stakeholders was crucial to

enhance buy-in and trust in the program itself. Further, knowledgeable stakeholders can formulate solutions to technical problems and questions encountered during implementation. They also are often the source of ideas for regulatory innovations. Knowledgeable stakeholders do not only come from industry, but also from community groups, local government bodies, or elsewhere. These partnerships with stakeholders can exist and be productive even without the development of a formal "advisory committee."

Recommendation 4: Where feasible, meet with the target audience to explain the pilot .

In PrintSTEP, copious outreach and assistance materials (e.g. the workbooks) were developed. Missouri and New Hampshire held meetings with printers in their pilot areas in order to present the PrintSTEP concepts, identify the most important sections of the workbook, and respond to questions. These meetings proved to be successful at enticing participants.

Recommendation 5: Provide technical and compliance assistance to pilot participants as appropriate.

Provision of direct, one-on-one technical and compliance assistance was very effective in both earning the trust of participants and bringing all participants into compliance early in the pilot period. Such assistance helped to lay the groundwork for continued compliance and progress implementing pollution prevention options.

Recommendation 6: Assess the interest in a public participation component when designing the pilot.

If significant public interest surrounds the topic that the program addresses, it is important to incorporate a public participation component into the pilot program. However, it is worthwhile to clearly assess the level of public concern before developing a public outreach component. Feedback may be elicited from relevant local community groups in various ways, formally (e.g., surveys, interviews) or informally (e.g., discussions, meetings). Sometimes public concern may be perceived on the national level that does not clearly exist on the state or local level, where the pilot is to be implemented. If, in fact, public interest and concern are apparent, the state or local group implementing the pilot program needs to determine the best way to address it and the level of effort required.

If a pilot includes a public participation component, keep community outreach materials succinct. Feedback from the SAGs was that the PrintSTEP *Community Workbook* was too lengthy. The Missouri DNR addressed this concern by summarizing the key concepts from the community workbook in a short brochure.

Recommendation 7: Take advantage of the opportunity to apply effective elements of pilot programs elsewhere.

Incorporation of the entire PrintSTEP program may not be feasible for some local and state environmental agencies. Also, the numbers of facilities that need a different type of

regulatory approach may be too low to warrant such an undertaking. However, distinct elements of the program may be an ideal fit within certain states or localities.

One element of the program was the workbook. Development of a regulatory roadmap that puts regulatory language into industry specific terms can be readily accomplished using the PrintSTEP workbook as one example. The state of Florida has provided such a workbook to the printing industry and the State of Wisconsin is currently in the process of developing a printing specific regulatory workbook.

Use of the Materials Use Tables for air permitting issues is another relatively easy-to-implement component of PrintSTEP. Upon revision of their permit requirements for the printing industry, the Ohio Department of Environmental Protection incorporated the Materials Use tables into their rulemaking. The Florida Department of Environmental Protection is also using the Materials Use tables for the development of their proposed regulatory changes impacting the printing industry.

Other elements include the methodology developed for community outreach and the use of a diverse stakeholder group to develop the program. Using consensus to build a program can result in a stronger and more effective program.

Recommendation 8: Where feasible, implement new opportunities for improvement even after initiation of the pilot.

States identified additional ideas for streamlining the regulatory process through their involvement in PrintSTEP. For example, NH DES is designing a computer-based model that will ease the difficulty of RTAP analyses. NH intends to continue the PrintSTEP program beyond the timeframe for the national pilot. In addition, in New Hampshire the annual report for “notification status” printers that have not made changes merely consists of signing a response card certifying compliance. In Missouri, the DNR drafted a comprehensive multi-media reporting form and will explore options for application within the state.

Recommendation 9: Develop and communicate an evaluation strategy prior to implementation of the pilot.

Prior to implementing a pilot, organizers should prepare a detailed evaluation strategy and circulate it for review. This document should explain the approach and rationale for the evaluation, including the methods to be used for information collection and the audiences to be addressed. All roles and responsibilities should be clarified in this document. The evaluation strategy developed for PrintSTEP was essential in the design of the program, from the development of the PrintSTEP Application to the selection of questions for the telephone survey. Although the evaluation deviated from the plan (i.e. a control group was determined to be too difficult to enlist), it formed the foundation and rationale for all related decisions.

It is important to reinforce to all pilot participants that they are responsible for both implementing the program and providing input for the evaluation. This expectation needs to be clearly stated as participants are recruited and subsequently join. Failure to make this expectation explicit can create tension later when pilot participants are asked to supply data and information. The commitment to the pilot must extend to the evaluation as well.

Recommendation 10: Choose an evaluation approach commensurate with the level of participation in the pilot.

The level of effort expended on the evaluation should be proportional to the participation and extent of the pilot. A small pilot may be evaluated with a streamlined effort. Certain activities, such as conducting phone surveys with the private sector, are labor intensive and time consuming. Limiting interviews to state personnel and a small number of other stakeholders may reduce the resource requirements.

Appendices

Appendix A – Minnesota PrintSTEP Pilot Summary
Appendix B – Sample Survey Instrument: End-point Survey for Printers
Appendix C – Sample PrintSTEP Application Form

Appendix A:
Minnesota PrintSTEP Pilot Summary

Introduction

A PrintSTEP pilot project was also planned in St. Cloud, Minnesota, but was concluded due to lack of interest from printers. While Minnesota baseline information does not exist, a summary of the Minnesota pilot is presented here. Information summarized from interviews with state staff is included in this section.

History

As in Missouri and New Hampshire, Minnesota received an EPA cooperative agreement to implement a PrintSTEP pilot program. The Minnesota Pollution Control Agency (MPCA) hired a PrintSTEP coordinator to run the program. PrintSTEP materials (i.e., *Printers' Plain Language Workbook* and *Community Handbook*) were customized to reflect state-specific requirements and were mailed to all printers identified in the pilot area of St. Cloud prior to hosting any information sessions. Through research conducted by the PrintSTEP coordinator, 32 eligible printers were identified in the St. Cloud area. The program was publicized to these printers in several ways:

- were invited to attend information sessions (three were held);
- printers received letters from MPCA, a joint letter of support from the printing trade groups, and a letter from a Twin Cities printer encouraging participation; and
- printers were individually contacted by phone to see if they had questions on the program, and were offered site visits to assist with their Application.

Months after the application deadline, the Minnesota PrintSTEP pilot had not received any Applications.

Based on individual phone conversations with the printers, the PrintSTEP coordinator had found two or three printers who were potentially interested, but had not completed their Applications. No other printers were interested in joining the program. The low level of interest was cause for concern; running a pilot program that had to be coordinated across media offices for only a few printers was not likely to be cost-effective. Following extensive discussions with EPA and management at MPCA, the Minnesota PrintSTEP pilot was terminated.

Factors Contributing to the Lack of Participation

According to MPCA staff, the Minnesota PrintSTEP Coordinator, EPA and several printers interviewed by MPCA, the following factors contributed to the lack of participation in PrintSTEP:

- *Regulatory simplifications were already in place in Minnesota.* PrintSTEP combines multi-media environmental requirements into one system, administered by one agency to simplify permitting. In Minnesota, regulations were already largely simplified. An innovative program had been implemented where most printers get a non-expiring Air Registration permit that has a one-page Application. Other printers do not have operations that require an air permit. For hazardous waste, MPCA had simplified reporting by supplying printouts of the facility's previous annual report and allowing facilities to simply mark revised quantities and return the form. In addition, hazardous waste fees and the Department of Revenue's hazardous waste taxes were already combined. Regarding water permitting, most printers do not have stormwater or wastewater permits due to the nature of their operations. Given the extent of regulatory reform that had already occurred in the state, most printers perceived that they would not benefit significantly from the regulatory simplification offered by PrintSTEP.

- *Smaller printers did not want to provide release and emissions data*. The PrintSTEP Application asked for release and emission information, much of which printers never had to submit to MPCA before. Being a voluntary program, small printers chose not to participate given the effort required to complete the Application as compared to the perceived benefits.

- *MPCA's extensive Workbook was distributed prior to meeting with printers.* Minnesota had mailed their Workbooks out to each eligible printer in the area prior to the PrintSTEP information sessions. Based on his conversations with printers, the PrintSTEP coordinator also noted that printers found the PrintSTEP Workbook to be overwhelming. In order to be a comprehensive manual for all environmental concerns for every size of printer, the Minnesota PrintSTEP Workbook ended up being over 100 pages long. Many printers did not feel they had the time to invest in reviewing the Workbook.

- *The community in St. Cloud did not show interest.* After extensive outreach to encourage public involvement, no members of the community expressed interest in participating in the program. During meetings in the winter of 2000-2001, members of the Minnesota PrintSTEP Stakeholders Advisory Group expressed that the printing industry in St. Cloud is not enough of a concern for the public to be involved. If the public had reason to be concerned and there had been greater community involvement, printers may have been more interested in joining as a way to interact with concerned members of the public and to improve their image.

- *Free pollution prevention assistance was already available in MN.* PrintSTEP encouraged pollution prevention primarily by offering free technical assistance and by highlighting how reduced releases and wastes lead to reduced regulatory requirements. Free technical assistance was already available to Minnesota printers through two sources: Minnesota Technical Assistance Program (MnTAP) and MPCA's Small Business Assistance Program.

Options Considered to Increase Participation

- Before concluding the PrintSTEP pilot, MPCA investigated several options for increasing participation.
- *Emphasize the expected increase in compliance.* PrintSTEP has a strong compliance assistance component. The pilot program considered stressing how PrintSTEP participation would improve their compliance across regulations. This approach has been successful in New Hampshire's PrintSTEP pilot. However, Minnesota was phasing out inspections of smaller media sources and Very Small Quantity Generators making it difficult to back up such an incentive.

- *Expand the PrintSTEP pilot area.* Intensive effort went into marketing the 32 eligible printers in the St. Cloud pilot area. This effort did not result in any printer Applications to join the program. Expansion of the pilot area may have produced enough applicants to run a meaningful pilot, however, extensive resources would be required to market to multiple areas, or statewide. Given the level of effort expended in St. Cloud with no applicants responding, it seemed likely to the PrintSTEP coordinator that similar efforts in additional areas would result in few, if any applicants.

- *Reduce annual fees.* A reduction in fees was investigated to attract participants, however this was not considered a sustainable incentive. Additionally, a fee reduction alone might not be enough of an incentive for printers who are largely satisfied with the existing regulatory structure.

- *Provide other incentives.* Other incentives to increase participation were also investigated. For example, free membership to the Minnesota Waste Wise program was considered. This program usually requires a $200 membership fee. Minnesota Waste Wise is a one-stop shop for waste reduction information and assistance. Eight printers in the pilot area were interviewed to determine if such an incentive, combined with the existing PrintSTEP benefits, would make PrintSTEP more attractive. The Waste Wise incentive did not appear to be enough to change printers' decisions about whether or not to participate in PrintSTEP. Other incentives were considered, however, any

significant additional incentives could skew the intent of PrintSTEP in that printers may be joining for add-on incentives only, rather than the benefits inherent to the program.

Appendix B: Sample Survey Instrument

End-point Survey for Printers

Telephone Survey for Printers: End-of-pilot Survey

1. In the past year, did you contact the PrintSTEP coordinator? [Bill Hernlund in Missouri or Tara Olson in New Hampshire]

   YES
   NO - SKIP TO Q1c

   a. How satisfied were you with the information obtained from *(name of state contact person and office/office*)Were you….

      Very satisfied - SKIP TO Q2
      Somewhat satisfied - SKIP TO Q2
      Somewhat unsatisfied, or
      Very unsatisfied

   b. Why weren't you satisfied with this information?

      Passed me to someone else
      Weren't knowledgeable
      Didn't have time to help me
      Other

   SKIP TO Q2

   c. Why not?

      DIDN'T KNOW WHO TO CALL
      COULDN'T REACH THEM
      DIDN'T NEED HELP
      OTHER

2. In the past year, have you obtained information from your technical assistance provider:
   For NH, this would be anyone in the Small Business Development Center, such as Andrea O'Brien, Mark Melessa, Rudy Cartier.
   For MO, this would be anyone in the Urban Outreach Office, such as Nancy Morgan or LaRhonda Garrett.

   YES
   NO - SKIP TO Q2c

   a. How satisfied were you with the assistance obtained from *(technical assistance provider/center name)?* Were you..

      Very satisfied - SKIP TO Q3
      Somewhat satisfied - SKIP TO Q3

Somewhat unsatisfied, or
Very unsatisfied

b. Why weren't you satisfied with the assistance from (*Technical assistance provider/name*)?
Passed me to someone else
Weren't knowledgeable
Didn't have time to help me
Other
SKIP TO Q3

c. Why not?

DIFFICULT TO ACCESS
NOT ENOUGH USEFUL INFORMATION THERE
DIDN'T KNOW ABOUT IT
DIDN'T HAVE TIME/TOO BUSY
OTHER (SPECIFY)

3. In the past year, have you used the PrintSTEP Workbook or other PrintSTEP documents?

YES
NO - SKIP TO Q3d

a. Which documents?
PrintSTEP WORKBOOK
COMMUNITY HANDBOOK
FACTSHEET

b. How satisfied were you with the content and format? Would you say you were….
Very satisfied - SKIP TO Q4
Somewhat satisfied - SKIP TO Q4
Somewhat unsatisfied, or
Very unsatisfied

c. Why weren't you satisfied with the PrintSTEP documents?

Difficult to follow/understand
WEREN'T WRITTEN IN YOUR PRIMARY LANGUAGE
OTHER (SPECIFY)
SKIP TO Q4

d. Why not?

DIDN'T KNOW THERE WERE ANY

DIDN'T HAVE THE INFORMATION I NEEDED
COULDN'T GET A COPY
OTHER (specify)

4. Did you use the PrintSTEP Information Repository during any part of the regulatory process?

YES
NO - SKIP TO Q4d

a. Which Repository location did you use?
INTERNET
LIBRARY
STATE/CITY OFFICE

b. How satisfied were you with the information available in the Information Repository? Were you…

Very satisfied - SKIP TO Q5
Somewhat satisfied - SKIP TO Q5
Somewhat unsatisfied, or
Very unsatisfied

c. Why weren't you satisfied with the information available in the Information Repository ?

DIFFICULT TO ACCESS
TOO FAR TO TRAVEL
DIFFICULT TO FIND WHAT I NEEDED
OTHER (SPECIFY)
SKIP TO Q5

d. Why not?

DIDN'T NEED IT
OBTAINED INFORMATION ELSEWHERE
DIDN'T KNOW ABOUT IT
DIDN'T HAVE TIME/TOO BUSY
OTHER (specify)

5. In the past year, have you obtained environmental regulatory information from any other source?
YES
NO - SKIP TO Q6

a. What other source was this?

b. How satisfied were you with the information obtained from *(name of other source)?* Would you say you were….

Very satisfied - SKIP TO Q6
Somewhat satisfied - SKIP TO Q6
Somewhat unsatisfied, or
Very unsatisfied

c. Why weren't you satisfied with the information obtained from (*name of other source*)

NOT ENOUGH USEFUL INFORMATION THERE
STAFF NOT KNOWLEDGEABLE ABOUT MY QUESTION
OTHER (SPECIFY)

6. In the past year, have you been involved in any type of outreach or public involvement activity related to your environmental activities?
YES
NO - SKIP TO Q7

a. What type of community outreach were you involved with related to your facility's environmental activities?

Direct mailing
To whom?
Newspaper notice
Posting signs
Hosting or attending an open house
Hosting or attending a public meeting
Hearings of conservation commission or health board
City council meetings
Some other type of community outreach

b. In general, how useful do you think these community outreach efforts were?

Very useful
Somewhat useful
Not very useful, or
Not useful at all

If the facility did NOT have a PUBLIC MEETING, per Q6, SKIP to Q10

7. Before you held your public meeting, did you provide public notice of the meeting?

YES
NO - SKIP TO 8

a. In providing public notice, did you use:

Direct mailing
Telephone contact
Newspaper notice or advertisement
Posted signs
Internet notice
In person or word-of-mouth
Any other type of notice (SPECIFY)

8. How useful was the (first/follow-up) public meeting as a way to learn about community concerns and expectations? Would you say it was…

Very useful
Somewhat useful
Not very useful, or
Not useful at all

9. What would have made the (first/follow-up) public meeting more useful? (MULTIPLE RESPONSES)

GREATER COMMUNITY ATTENDANCE
PARTICIPATION OF STATE AGENCY STAFF
COMMUNITY INVOLVEMENT PLAN DEVELOPED
OTHER (SPECIFY)

10. The PrintSTEP program is designed to provide opportunities for people to get involved by inviting comments on printer's application and making program information readily available to the public. For the PrintSTEP Program as a whole, there was limited interest from the public. Why do you think community members did not participate in the PrintSTEP process?

11. I'm going to read of list of possible outcomes of the PrintSTEP public involvement activities. For each one, please tell me if it was an outcome of your own involvement in PrintSTEP since you joined the program. (YES or NO)

- Your facility's compliance has improved
- You are more comfortable contacting the state agency for help
- Your facility has used new or different approaches to address environmental problems
- The schedule for your PrintSTEP Agreement or Notification was shortened compared to the time it used to take under the standard permitting process
- The schedule for your PrintSTEP Agreement or Notification was lengthened compared to the time it used to take under the standard permitting process
- Your facility now reviews the chemical content of purchased materials more closely
- Other?

12. What effect did the multi-media (i.e., air + water + waste) coordination at the state agency have on the regulatory process? Did it usually....

Speed up the process
Slow down the process
Sometimes speed it up and other times slow it down
Have no effect at all

13. We would like to get a sense of printers' perception of your environmental regulatory requirements. For each area that I read, please tell me whether you would rate your own understanding as very good, good, fair or poor. How would you rate your understanding of the (READ ITEM)? [Repeat for pre-PrintSTEP understanding.]

	VERY GOOD	GOOD	FAIR	POOR
Air regulatory program and associated requirements	4	3	2	1
Storm Water regulatory program and associated requirements	4	3	2	1
Waste Water regulatory program and associated requirements	4	3	2	1
Hazardous Waste regulatory program and associated requirements	4	3	2	1

14. FOR EACH ITEM RESPONDENT ANSWERED FAIR OR POOR IN Q13 ABOVE, ASK:

- What about the (air/storm water/waste water/ hazardous waste) regulatory program or requirements do you find difficult to understand?

TOO COMPLICATED
LACK OF EASY-TO-READ INFORMATION
NO TIME TO LEARN
HARD TO GET INFORMATION FROM GOVERNMENT STAFF
OTHER (SPECIFY)

15. Has an environmental requirement affected your company's ability to respond to a business opportunity during the course of PrintSTEP? For example, installing a new piece of equipment; meeting the request of a customer or potential customer for a different ink, coating, etc.; increasing production; or bringing out-sourced operations in-house?

YES
NO - SKIP TO Q16
Don't know

a. Can you describe a recent time this happened?

b. How big an impact did this have on your company's profitability or growth opportunity? Would you say it was…

i. A slight impact
ii. A moderate impact
iii. A serious impact or
iv. A severe impact

16. Since joining PrintSTEP, has the time your facility spends on **record keeping** related to environmental requirements, filings, permits, and process/facility modifications, increased, decreased, or remained the same?
INCREASED
DECREASED
REMAINED THE SAME - SKIP to Q17

a. By how much (as a percentage)?
b. What caused this change?

17. Since joining PrintSTEP, has the time your facility spends on **reporting** related to environmental requirements, filings, permits, and process/facility modifications, increased, decreased, or remained the same?
INCREASED
DECREASED
REMAINED THE SAME - SKIP TO Q18

a. By how much (as a percentage)?
b. What caused this change?

18. What benefits do you see from your involvement in PrintSTEP?

19. What drawbacks do you see from your involvement in PrintSTEP?

20. What recommendations do you have for program improvements?

21. Overall, how satisfied are you with the PrintSTEP process?
Very satisfied
Somewhat satisfied
Somewhat unsatisfied, or
Very unsatisfied.

CLOSING: Those are all my questions. Thank you very much for your time.

Appendix C: Sample PrintSTEP Application

PrintSTEP Application

1. Background Information

Reporting year:			
This is a (***circle one***): Initial PrintSTEP Application		or	Annual PrintSTEP Renewal
Your Name:		Phone:	
Facility Name:		Fax:	
Street Address:		E-mail:	
City:			
Number of Employees:	Full Time=	Part time=	

2. Type of Printing Operations

TYPE OF PRINTING PROCESSES YOU USE	**Check all that apply**	**If you have multiple processes, estimate the percentage of production from each process*:**
Sheetfed Lithography		
Non-heatset Web Lithography		
Heatset Web Lithography		
Flexography		
Screenprinting		
Gravure		
Digital Impressions		

3. Waste Water Information

Refer to Chapter 3 in *Plain Language Workbook*.	Yes	No
Do you discharge any wastewater to a septic system? If so, what do you discharge? _____ _____		
Do you discharge industrial wastewater to a sewer district? If yes, what do you discharge? _____ _____ Do you have an authorization letter or permit from your POTW?		
Do you discharge wastewater directly to surface water? If so, what do you discharge? _____ _____ Do you have an NPDES permit for this discharge?		

If you have a wastewater permit or authorization letter, complete the following information:

Date Permit Obtained		Permitting Authority:	
Expiration Date:		Permit Number:	

Estimate the amount of waste water discharged over the last 12 mos.

4. Storm Water Information

Refer to Chapter 4 in the *Workbook*.

	Yes	No
Do your facility meet the "no-exposure" status for wastewater as determined by the checklist on Page X of Chapter 4 in the Workbook?		
Please attach a copy of your checklist.		

5. Hazardous Waste Generation

Refer to Chapter 5 in the *Workbook*.

Do you have an EPA ID Number for hazardous waste generation? **If so, what is it? _____**	
What is your RCRA generator status?	**Check One:**
No hazardous waste generated	
Status is Unknown	
Small Quantity Generator (SQG)	
Full Quantity Generator (FQG) <1000kg/month, or 2200#/month	
Full Quantity Generator (FQG) >1000kg/month, or 2200#/month	
If you are a SQG, have you submitted your self-certification declaration, fee and Corrective Action Plan, if necessary, by applicable deadline (1/04, 1/05, 1/06)?	**Y or N**
If you are a FQG, have you or a staff person at your facility completed the required annual coordinator training and certification and renewed it annually?	**Y or N**

List all industrial wastes generated during the past 12 months; attach additional sheets if necessary.

Name of the Waste	**Waste Type***	**Process or Activity Generating Waste**	**Amount Generated** (lbs or gal)

- If the waste is a listed hazardous waste, enter the RCRA waste code (such as D001), otherwise enter the RCRA characteristic ignitable, corrosive, reactive, or toxic.

6. Air Emissions

Refer to Chapter 6,7, and 8 in the *Workbook*.

What is your VOC Air Level, calculated from Chapter 6?						
	circle one:	1	2	3	4	5
Are you below deminimus levels for each RTAP you use? (see Chapter 7 in the workbook). Yes or No?						
	If YES: proceed to next section.	or	If NO: contact NH DES Air Resources Division.			

7. Public Involvement

Refer to Chapter 11 in the *Workbook*.

How has your facility interacted with your community and immediate neighbors in the past year regarding environmental concerns? (Refer to Chapter 11 in the *Workbook*)	**Check all that apply**
Open House	
Mailings – advertising	
Mailings - non-advertising	
Discussions with Community leaders	
Public Meeting	
No Activity	

8. Technical Assistance

Refer to Appendix A in the *Workbook*.

As a PrintSTEP participant, you will have access to free technical assistance. These specialists can help you with pollution prevention, environmental compliance, or any questions on PrintSTEP. A list of technical assistance contacts is provided in Appendix A. Check here if you would like a technical assistance specialist to contact you: ❑ Please list any areas you particularly would like assistance with.

_____

_____

_____

_____

9. Production or Activity Indicator

You will report a single number <u>without units</u>. Only you will know the derivation of this number (be it square feet printed, sales, labor hours, etc.). You will keep that information on file for use again in the next reporting cycle, when the next year's number will be compared to the last year's number to see how it has changed.

Please turn to page X for an explanation and directions.
What is your production or activity indicator?_____

Directions for Completing Question #9: Productivity Indicator.

EPA is collecting environmental impact data on this application in order to evaluate the overall pilot PrintSTEP program, which is being carried out in three states. In order to accurately account for changes in environmental emissions or waste during the course of the PrintSTEP program, EPA must be able to determine if a change in emissions/waste is the result of a change in environmental management practices, or if the change is due to increasing or decreasing production. To make this determination possible, facilities must provide: 1) an indicator of current year production; OR 2) an indicator for level of activity based on a variable other than production that is the primary influence on the quantity of material your facility recycles, treats or releases. You may report a number reflecting either production or activity.

While several methods are available for determining this data element, *the production or activity indicator must be based on the variable that most directly affects the quantities of material recycled, treated or released*. Examples of indicators available include the following:

- Square feet of substrate printed this year;
- Number of impressions made this year;
- Total annual sales this year;
- Total annual labor hours this year;
- A different method that you select.

Example 1, using sales:

You determine that annual sales is the best indicator of the quantity of material your facility recycles, treats or releases. Your total annual sales were $500,000 in 2000. You could report an activity indicator of 5.0; 500,000; or something similar that reflects sales but does not include units.

Example 2, using number of impressions:

The variable that most closely reflects the quantity of material the facility recycles, treats or releases is number of impressions, since most of those impressions are similar in terms of size, substrate, and complexity. If your total number of impressions was 104,000 in the current reporting year, you could report a production indicator of 104.

10. Pollution Prevention Information

Refer to Chapter 2 and Appendix B in the *Workbook*.

Pollution Prevention Practice For new PrintSTEP applicants, answer: Have you ever...? For annual renewal of PrintSTEP, answer: Over the last year, have you?	*Check the appropriate column:*				
	Yes	**No**	**Investigating**	**Don't Know**	**N/A**
PREPRESS Eliminated chrome based cleaners?					
Installed and properly maintained silver recovery units?					
Used developer and fixer recycling units for film processors?					
Used low replenishing rate film chemistry?					
Used recycling units for film and plate processor washwater?					
Used digital, dry, or water-based proofing systems?					
PRINTING Used first-in-first-out inventory system to reduce waste ink disposal costs?					
Switched to low VOC ink systems (e.g., UV curable, water or vegetable-based technology)					
Used stay open inks or cartridge ink delivery system?					
Where possible, used low solvent, or water-based ink jet inks?					
Used chiller re-circulators to reduce evaporation and lower air emissions?					
Switched to isopropyl alcohol free fountain solutions or reduced concentration of isopropyl alcohol in fountain solution?					

Pollution Prevention Practice For new PrintSTEP applicants, answer: Have you ever...? For annual renewal of PrintSTEP, answer: Over the last year, have you?	*Check the appropriate column:*				
	Yes	**No**	**Investigating**	**Don't Know**	**N/A**
Installed filtration system for fountain solution re-circulation system?					
POST-PRESS/ CLEANING/WIPES Switched to low vapor pressure or low VOC cleaning solvents (less than 10 mm Hg) to reduce air emissions and solvent use?					
Replaced hazardous solvents with non-hazardous or less hazardous solvents?					
Instituted a solvent recycling/reuse system?					
Stored soiled wipes in closed or covered containers to reduce air emissions?					
Recover free liquids from shop towels (i.e., gravity draining, wringers, centrifuges, etc.)?					
Where possible, used low solvent, no solvent-based, or water-based adhesives and glues?					
REUSE/ RECYCLING Implemented a solid waste/recycling program to recycle all possible items from your solid waste stream?					
Reused and recycled pallets and skids to reduce solid waste?					
Collected and recycled used oil, other lubricants, and batteries?					
Recycled parts washing fluids?					
Properly Recycled or disposed of spent fluorescent and HID lamps?					
Requested vendor take back all samples not consumed?					
HOUSEKEEPING Covered all open containers of liquids and keep them closed?					
Stored all materials to minimize damage due to mishandling or accidents?					

Confidential Business Information (CBI) Notice:

EPA's regulations on confidential business information (CBI) are found in 40 CFR Part 2, Subpart B. (A copy is available, upon request, from your State PrintSTEP coordinator.) Please identify any information that you claim is confidential business information. If you make a confidentiality claim, and if EPA determines that the information you designated meets the CBI criteria in 40 CFR Section 2.208, we will disclose the information only to the extent, and by means of the procedures, specified in 40 CFR Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, it may be made available to the public without further notice to the business.

Signature of PrintSTEP Applicant: _____

Printed Name: _____